

# THE CHEMIST

January 1953

VOLUME XXX



NUMBER 1



**DR. SIDNEY D. KIRKPATRICK**

*Receives Honorary AIC Membership  
(See page 7)*

# GET ALL 3



**Uniform Purity**

**Wide Selection**

**Prompt Service**

**by specifying B&A REAGENTS**

"Setting the pace in chemical purity since 1882"—that is the slogan, and the reputation, of Baker & Adamson.

That's because B&A Reagents are *always* uniform. Their purity is predetermined. They always meet or exceed established A.C.S. specifications—the strict, impartial purity requirements set by the chemical profession itself for careful analytical work.

*But you get more than this with B&A!*  
You have a wide and excellent selection to

choose from. B&A offers over 1,000 purity products of Reagent, A.C.S., C.P., U.S.P., N.F. and Technical grades. And B&A's own well-stocked distributing stations, located in key industrial centers, are ready to supply your needs promptly and efficiently.

Just tell the nearest B&A office what your regular reagent requirements are; they will be glad to build stocks to meet your particular needs.



**BAKER & ADAMSON** *Reagents*

**GENERAL CHEMICAL DIVISION**

ALLIED CHEMICAL & DYE CORPORATION

-----40 RECTOR STREET, NEW YORK 6, N. Y.-----

Offices: Albany • Atlanta • Baltimore\* • Birmingham\* • Boston • Bridgeport\* • Buffalo\* • Charlotte  
Chicago\* • Cleveland\* • Denver\* • Detroit\* • Houston\* • Jacksonville • Los Angeles • Minneapolis  
New York\* • Philadelphia\* • Pittsburgh\* • Providence\* • St. Louis\* • San Francisco\* • Seattle • Tacoma (Wash.)  
In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal\* • Toronto\* • Vancouver\*

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

\*Complete stocks are carried here.



*You'll get*  
higher pumping speeds  
at lower pressures

*when you use*

**cenco**<sup>®</sup>

*Hyvac*<sup>®</sup>  
*Oil*

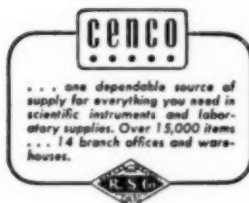
Cenco Hyvac is especially processed for use in high vacuum pumps. It assures maximum vacuum pumping speed at low pressures in Cenco Vacuum Pumps as well as in other makes of mechanical pumps. We've made exhaustive tests on the physical properties of a wide variety of vacuum pump oils. And we have found that Cenco Hyvac shows an increase in pumping speed of as much as 35% over that obtained from other oils.

It has low vapor pressure with small viscosity change at temperatures from 50° C to as low as 15° C.

Get the most from your vacuum pumps. Use Cenco Hyvac Oil. Order today for prompt delivery.

No. 930508... Quart bottle,  
**\$0.75**

No. 93050C... Gallon can,  
**\$2.45**



**CENTRAL SCIENTIFIC COMPANY**

1700 IRVING PARK ROAD • CHICAGO 13, ILLINOIS  
CHICAGO NEWARK BOSTON WASHINGTON DETROIT SAN FRANCISCO  
SANTA CLARA LOS ANGELES TORONTO MONTREAL VANCOUVER OTTAWA

**REFINERY SUPPLY COMPANY**

621 EAST FOURTH STREET • TULSA 3, OKLAHOMA  
2215 MCKINNEY AVENUE • HOUSTON 3, TEXAS

# *The* CHEMIST

Reg. U. S. Pat. Off.

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd Street, New York 17, N. Y.

---

---

Volume XXX

January, 1953

Number 1

---

---

Editor: V. F. KIMBALL

## **Editorial Advisory Board**

RAYMOND E. KIRK

HILTON IRA JONES

WALTER J. MURPHY

## **Contributing Editors**

M. R. Bhagwat, 722 Park Place, Niagara Falls, N. Y.

Lawrence H. Flett, National Aniline Div., Allied Chemical & Dye Corp.,  
New York 6, N. Y.

D. H. Killeffer, 168 Westchester Ave., Tuckahoe 7, N.Y.

Dr. Richard L. Kenyon, Bush House, Aldwych, London, W. C. 2, England.

Dr. George F. Rugar, 54 Waldamer Ave., Willoughby, Ohio.

Dr. Frederick G. Sawyer, Stanford Research Institute, Stanford, Calif.

Dr. Julian F. Smith, 201 Spring Ave., Takoma Park, Maryland.

Florence E. Wall, Consultant, Writer, 210 East 68th Street, New York, N. Y.

## **Department Editors**

*Condensates*, Dr. Ed. F. Degering

•

*AIC Activities*, C. P. Neidig

*Chemical Books Abroad*, Rudolph Seiden

*Opportunities*, Doris Eager

---

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in *THE CHEMIST*.

Entered as second class matter April 8, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly at 60 East 42nd Street, New York 17, N. Y. Subscription price, \$2.00 a year to Members, \$3.00 to Non-Members. Single copy, this issue \$0.25. Copyright, 1953 by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

## **SCHEDULED FOR EARLY PUBLICATION**

Sixteen Years of Chemical Education in China, Dr. Peter P. T. Sah

Chicago Chapter Award to Bernard E. Schaar.

Avenues of Service, Bernard E. Schaar.

Pennsylvania Chapter Award to Dr. Percy A. Wells

Some Problems in Research Management, Dr. P. A. Wells.

Annual Reports

The Philosophy and Objectives of Research, Dr. M. L. Crossley, Hon. AIC.



## IN THIS ISSUE

<b>Editorial:</b>	
<b>Outlook for the Future, Charles S. Munson</b>	<b>5</b>
<b>Chemists Are Human Beings,</b>	
<b>Dr. Sidney D. Kirkpatrick, Hon. AIC</b>	<b>7</b>
<b>Entgegennahme der Ehrenmitgliedschaft im AIC,</b>	
<b>Dr. Sidney D. Kirkpatrick, Hon. AIC</b>	<b>11</b>
<b>Introduction, Karl M. Herstein, F.A.I.C.</b>	<b>12</b>
<b>Presentation of Honorary AIC Membership to Dr. Kirkpatrick</b>	<b>14</b>
<b>Research Returns from Patents and Inventions,</b>	
<b>Dr. E. H. Northey, F.A.I.C.</b>	<b>17</b>
<b>Industrial Aspects of Skin Cancer,</b>	
<b>Dr. Ernest L. Wynder, M.D.</b>	<b>23</b>
<b>An Employment Advisory Service II,</b>	
<b>Dr. William I. Harber, F.A.I.C.</b>	<b>33</b>
<b>In Memoriam:</b>	
<b>Dr. V. N. Ipatieff</b>	<b>35</b>
<b>Council</b>	<b>37</b>
<b>AIC Activities</b>	<b>38</b>
<b>Will You Come?</b>	<b>42</b>
<b>For Your Library</b>	<b>43</b>
<b>Something New</b>	<b>46</b>
<b>Opportunities</b>	<b>47</b>
<b>Condensates</b>	<b>52</b>

## ANNUAL MEETING PAPERS

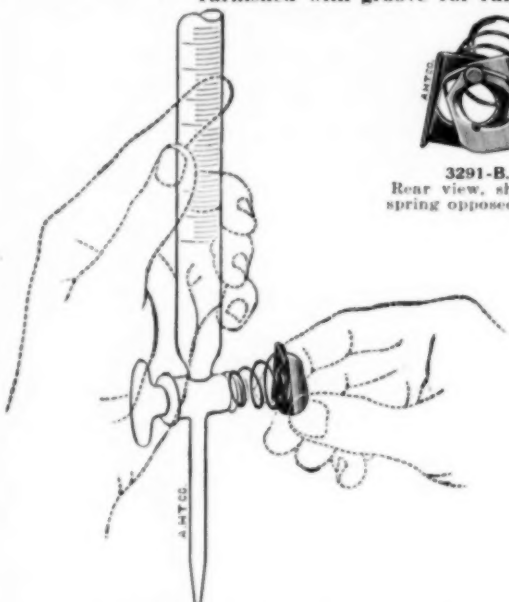
Continuing the series of excellent papers presented at the 1952 AIC Annual Meeting, the following articles will appear in the February and later issues of THE CHEMIST:

The Technical Editor's Approach to an Expanding Literature, by D. O. Myatt  
 The Consultant's Organization, by Dr. Foster D. Snell, F.A.I.C.

A. H. T. CO. SPECIFICATION

## STOPCOCK TENSION CLIPS

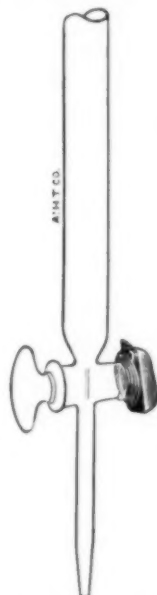
For *INSTANT* attachment to, or removal from, practically any stopcock with plug furnished with groove for rubber washer



3291-B. Method of attachment or removal.



3291-B.  
Rear view, showing  
spring opposed jaws.



3291-B. In position.

**STOPCOCK TENSION CLIPS, A. H. T. Co. Specification, (Patent applied for.)** Of Stainless steel, for pressure-tight seating of practically any type stopcock with groove for rubber washer at small end of plug.

Can be attached instantly by compression of the spring combined with thumb and finger pressure on the narrow flanged sides. Can not work loose, but can be removed instantly. Recommended for glassware which requires hand or mechanical shaking such as Van Slyke Apparatus, Separatory Funnels, etc., and to improve the efficiency of stopcocks on Burettes, Gas Analysis Apparatus, etc. Clip does not interfere with normal manipulation of the stopcock handle.

**3291-B. Stopcock Tension Clips**, as above described. Distal edge of the groove in plug must be at least 1/16-inch beyond stopcock shell for satisfactory use.

Maximum jaw diameter, mm.....	11	16	19
Fits stopcock No.....	1, 1-1/2, 2	3, 4	5, 6
<b>Each</b> .....	<b>1.00</b>	<b>1.10</b>	<b>1.25</b>
10% discount in carton containing 12			
20% discount in lots of 144			

**ARTHUR H. THOMAS COMPANY**  
LABORATORY APPARATUS AND REAGENTS  
WEST WASHINGTON SQUARE  
PHILADELPHIA 5, PA.

Teletype Services: Western Union WUX and Bell System PH-72

Telephone Service: Direct private wire New York to Philadelphia  
(no toll charge). REctor 2-5035

## EDITORIAL

### Outlook for the Future

*Charles S. Munson, President, Manufacturing Chemists' Association, Inc.*

*Chairman of the Board, Air Reduction Company, Inc.*

**T**HE program (of the Manufacturing Chemists' Association, Inc.) for the long-range recruitment of qualified scientific talent is a significant symbol of the industry's belief that it has nowhere to go but up. True, there may be somewhat less spent for new construction in 1953 than in 1952, and production may not mount as it has in the past because some of the supply lines to consumers are pretty well filled at the moment.

But the chemical industry has before it a horizon of jobs that have only begun to be done. This is the industry that must help us use our natural resources more efficiently, upgrading those that have seemed unfeasible for use in the past. This is the industry that must process wastes to stretch our wealth, that must lengthen the life of materials we now use with coatings and preservatives, that must nurse more food from limited fertile land, that must help solve the mysteries of disease, that must comb the sea and the earth and the soil for new resources which are as yet unknown.

For those who believe America's postwar expansion is done with climbing the hill and is ready to turn down to a lower plateau, the chemical in-

dustry may well have some surprises. As the top sponsor of research and development in the manufacturing field, the industry looks to a continuation in 1953 of its traditional flow of new products, new processes, and new knowledge of how to put the elements together in serviceable combinations.

Our only logical course is expansion, and I believe the nation can look forward to continuing pursuit of that course in the coming year.

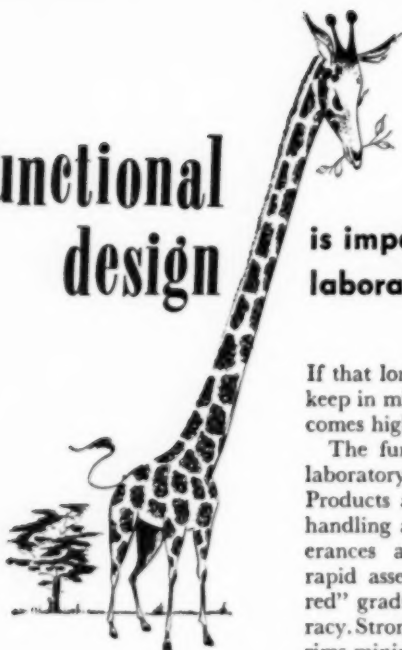
---

**Future for Fabrics:** They "will require no ironing or dry cleaning, will be lightweight and comfortable in all seasons, will be extremely durable and economical, and will be available in a wider variety of patterns and colors than ever before. In addition, tomorrow's fabrics will contain built-in properties rendering them fire-resistant, mildewproof and mothproof." Carl A. Setterstrom, F.A.I.C., sales manager of the Textile Fibers Department of Carbide and Carbon Chemicals Company, made the prediction.

---

**To Our Readers:** May 1953 prove to be a better year for you than 1952.

# functional design



is important in  
laboratory glassware, too!

If that long neck on the giraffe looks silly—keep in mind that he needs it to eat. His food comes high . . . on treetops!

The functional design of PYREX brand laboratory glassware is no accident, either. Products are designed to permit convenient handling and compact storage. Uniform tolerances and interchangeable parts assure rapid assembly and disassembly. "Lifetime-red" graduations improve reading and accuracy. Strong reinforcing beads and fire-polished rims minimize breakage and chipping.

And PYREX brand glass No. 7740 is functional also . . . assuring balanced resistance to corrosion, physical and thermal shock. All these features add up to a superior product . . . long on service life for real economy.

Your laboratory supplies dealer stocks the complete line of PYREX brand laboratory glassware. He will be glad to help you in planning your requirements. Call him today.



For less storage and working space is required for the new PYREX brand Manometer. It's easy to fill, too, and clamps into place on any apparatus set-up. And it's stronger than the old U-type.



Typical of the design efficiency of PYREX brand laboratory ware is the graduated cylinder. Hexagonal base keeps it from rolling when it is laid on its side. Reinforcing bead prevents breakage when it is upset. Fire-polished rim minimizes chipping. "Lifetime-red" graduations are easy to read.



Streamlined design of PYREX brand Desiccators makes them easy to handle and gives them added strength. New sleeve-type stopcock on vacuum types adds a new measure of convenience.

**PYREX**® the laboratory glassware that gives you economy, accuracy, durability

**CORNING GLASS WORKS, CORNING, N. Y.**



# Chemists are Human Beings

Dr. Sidney D. Kirkpatrick, Hon. AIC.

*Editorial Director of Chemical Engineering and Chemical Week.*

(Presented when Honorary AIC Membership was awarded to him in New York, N. Y., October 9, 1952).

I keep six honest serving men  
They taught me all I know  
Their names are How? and When?  
and Where?  
and What? and Why? and Who?

—Kipling

I HAVE a confession to make. I am more interested in chemists than I am in what dear old Professor Noyes used to call "our beloved science of chemistry." Perhaps I'm peculiar, but I've always found more personal satisfaction in people than in things. I feel that when I know the answer to Who?, then the How and the When and the Where and What and Why are usually rather easily disposed of.

About twenty years ago I made a speech at a banquet during the St. Petersburg meeting of the American Chemical Society. At the time I thought it was pretty good and was rather disappointed that no journal—not even *Chem. & Met.*—saw fit to publish it. Perhaps the reason was that I had titled it "Are Chemists Human Beings?" Or maybe it was because I didn't quite answer my own

question—at least to the editors' satisfaction.

Anyway, I proceeded to prove, or thought I did, that while we had all done a pretty good job in selling the world on the wonders of chemistry, the chemist remained a mysterious, misunderstood, miserably underpaid scientist. Too often in those dark days of the great depression, chemists and engineers were regarded as mere chattel to be hired or fired with every change in the business cycle.

With some temerity, I told my audience that the biggest, most serious problem before the American Chemical Society at that time was "to enhance the professional standing of the chemist—to prove that he is or can be a useful, respected member of society."

In good Dale Carnegie fashion, I asked the rhetorical and oratorical question: "Who is responsible for this sorry state of affairs?" I was frank to admit that to some extent the chemist himself was to blame. He was more interested in his work than in the profits from its results. He was

better satisfied with getting a paper on his research published in five foreign journals than in getting a salary that ran into five figures. Too often he would rather bestow his affection on his beloved science than on his fellow men who go to make up the society in which he lives and works.

But, at that time, it seemed to me that an even larger share of the responsibility rested with our professional and scientific societies. I indicted them on the score that "they have been occupied so much with advancing science and industry that they have overlooked the fact that the work is done by chemists who are human beings, who must eat, wear clothes, buy shoes for the baby, and occasionally go to the movies."

All that, I'm now glad to say, was almost twenty years ago. Since then there has been a great advance in the professional, economic and social status of chemists and chemical engineers. THE AMERICAN INSTITUTE OF CHEMISTS has been in the vanguard of that procession. But, in all fairness, we should give abundant credit to our sister societies—particularly the American Chemical Society and the American Institute of Chemical Engineers. Both have supplemented their purely scientific and technical activities with well-organized programs for helping to improve the professional and economic standing of their members.

There is still work to be done. In my opinion, the chemical profession as a whole could benefit immensely from an overall program comparable to the Engineers' Council for Professional Development. That organization, you will recall, was established some years ago by the major engineering societies as a joint effort toward improving the professional capacity and standing of the individual engineer. It is primarily a self-improvement plan. It has been called a cradle-to-the-grave program in that it begins with guidance activities for high school students, carries through the accrediting of engineering college curricula, and follows the young engineer into post-graduate and training-in-industry course, finally leading to professional recognition and competence.

It's a long-time job, but exceedingly worth while because it deals essentially with the personal problems of the individual engineer. I guess that's why it appeals so much to me.

### **"How Am I Doing?"**

That, incidentally, is the title of an excellent little book by an old friend of many of us, Robert F. Moore, the management consultant who was formerly placement director at Columbia University. The sub-title of Bob's book is "Self-Appraisal for the Aspiring Executive." It's addressed to the young man or the old-young man with a strong urge to go places. Here are some of the chapter head-

## CHEMISTS ARE HUMAN BEINGS

ings: How long is a rut? Salary symptoms, Greener grass, The boss and I. The final chapter, which appealed most to me, is headed "Friends Unlimited."

Bob starts off that chapter with this quotation from the famous "Million Dollar Lecture" which Prof. Erwin H. Schell gives his Course XV, MIT graduates each year:

**"I will measure the rate of achievement of your future success largely in terms of your ability to find, make and keep friends. I'm confident you will fit on the job for which you have been trained. But your greater opportunities will come only after you have proved your ability to fit in the organization, and to fit in an organization is to find your place among friends."**

Psychologists tell us that the basic human needs of mankind are not all concerned with food, clothing, health and shelter. There are emotional hungers that are just as real as physical hungers. They must be satisfied in every life from the lowliest to the very highest.

If you're interested, I can tell you what I learned about these emotional needs from a lecture course I took in elementary psychology at the Maplewood High School for the Adult Education of ignorant editors, chemists, and other underprivileged citizens. I think the teacher called them the Thomas four wishes. Here they are:

First was *Recognition*. People like

to be noticed, to be recognized as being good at something. If no one pays any attention to you, you can become awfully unhappy—no matter where you are on the ladder of success.

Second is *Security*. People also like to be accepted, to belong in the company of other people they respect, to hold on to what they have.

Third is *New Experience*. The desire for change, for novelty, for greener pastures.

Fourth, and I was glad to see Bob Moore rated it the one need that is all-inclusive—is the need for friendship. Thomas calls it *Response*, and varies it all the way from friendly acquaintance to love and affection.

Had I been smart enough to have studied psychology in college, I might even have been one of Moore's aspiring executives instead of a perspiring editor. But even at this late date, I find my newly acquired knowledge mighty useful. I've discovered that most men don't take off their human emotions with their overcoats when they come to work in the office, plant or laboratory. Whether they are fellow employees or bosses, customers or suppliers, they have the same human needs for recognition and response. And friendship, of course, is a two-way street. It's awful trite, but true, to say that he who would make friends must himself be friendly.

Please get me right on this. When I'm talking about friends I'm not thinking about so-called business con-



tacts—acquaintances made for purely selfish purposes. Such friends seldom last. I'm talking about the friends you make and keep over the years, primarily for the sake of friendship itself. They are the ones who will add to the fun and satisfaction of your life. They become part of your fortune—in fact, your most priceless possession. *"Without the love of friends, the richest man is poor indeed."*

I'm not going to tell you how to make friends and influence people. You can buy Dale's book—as I did. But I'm going to pass along this advice. There are no better places to make friends than in our professional societies. You should not only join, but you should participate in their activities. The friends you make as you jointly shoulder responsibilities in these organizations will pay you more generous dividends than you will ever get on any other investment of your time and energy.

That brings me to a final thought I want to leave with you. This time I'm talking to my contemporaries here in the bald-headed row.

I know I shouldn't admit it, but sometimes I seem to write my best speeches in church. Last Sunday the Minister reminded us that all of life—whether for the individual, the community or the nation—seems to follow three stages of development. First, there is the period of *depend-*

*ence* when we must lean largely on others. Then comes the period of *self-assertion*, or independence, and finally we arrive at a period of *cooperation* when we can share our competence and experience with others.

I could not help but think of the parallel with our professional progress and responsibilities. The young graduate as he strives to make a mark for himself in his chosen profession is obviously dependent upon others for guidance, whether by precept or example. To belong to his professional society gives him a feeling of security while he's struggling for recognition and reward. As he reaches professional maturity he may become more or less independent of the help he can derive from his society. But if he's really wise he will have learned by that time that the more he puts into unselfish work for his fellow men, the more satisfaction will come from his efforts.

Finally, when we get into our fifties and sixties we begin to realize that our greatest responsibility is to share with others what we've learned along the rocky road to professional progress. So, to the younger members of the INSTITUTE who can and must carry the torch in the years ahead, I pledge you my support and that of my contemporaries. On their behalf, as well as my own, I proudly accept this honor as a challenge and reminder of the debt we all owe to our profession.



# Entgegennahme der Ehrenmitgliedschaft im AIC

Dr. Sidney D. Kirkpatrick, Hon. AIC.

(Presented when Honorary AIC Membership was awarded to him at an "Old-Fashioned Bier Abend und Deutsches Dinner", held by the New York AIC Chapter at Hans Jaeger's Restaurant in New York, N. Y., October 9th)



**H**ERR Praesident und mein lieber Nachbar, Dr. Work,

Mein alter Freund und Ihr naechster Praesident, Dr. Keyes,

Mein kahlkoeppfiger Bruder, Ihr Vorsitzender, Herr Doktor (nicht "hair doctor"), Karl Herstein,

Meine Damen und Herren:

Ich begreusse Sie. Ich danke Ihnen aus tiefstem Herzen fuer die Ehrenmitgliedschaft in dem beruehmten AMERICAN INSTITUTE OF CHEMISTS. Ich habe nichts dazu getan, um diese hohe Ehre zu verdienen. Aber ich

bin sehr gluecklich und stolz, meinen Namen auf diesem schoenen Diplom und auf der Liste von fuenfzig beruehmten Chemikern und Ingenieuren vorzufinden, welche in der gleichen Weise geehrt worden sind.

Ihr Programm nennt den Titel meiner heutigen Ansprache "Inside Kirkpatrick." Das ist ein sehr grosses Thema im Moment, da ich angefuellt bin mit gutem deutschen Bier und Schnapps und Pretzln und Sauerkraut.

Aber auch Inside Kirkpatrick ist heute Abend ein tiefes Gefuehl von Liebe und Dankbarkeit fuer meine Brueder des chemischen Berufs. Seine Zukunft stuetzt sich nicht auf uns Alte, sondern auf die juengeren Maenners und Frauen, welche die Arbeit fortsetzen werden, die wir angefangen haben. Hier in diesem Kreise ist der beste Platz fuer dieses Ziel.

Das AMERICAN INSTITUTE OF CHEMISTS wurde 1923 gegrundet und hat waehrend dieser dreissig Jahre staendig daran gearbeitet, das Prestige und die Wuerde des Berufs zu erhoehen. Es hat hierdurch die wirtschaftliche und soziale Lage

seiner Mitglieder—jung und alt—  
bedeutend gesteigert.

Noch einmal, meine lieben Freunde,  
sage ich Ihnen meinen aufrichtigen

Dank. Ich werde diesen wunderbaren  
und glücklichen Abend niemals ver-  
gessen.

Das ist alles. Gute Nacht, und  
Gott segne Sie!

## Introduction

**Karl M. Herstein, F.A.I.C.**

*Chairman, New York AIC Chapter; President, Herstein Laboratories, Inc.,  
128 Water St., New York 5, N. Y.*

(Presented at the October 9th meeting of the New York AIC Chapter,  
when Honorary AIC Membership was awarded to Dr. Sidney D. Kirkpatrick)

**T**HIS meeting has another purpose in addition to the one which appeared in the announcement. First of all, it is a meeting of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, and like all of its meetings, it is primarily devoted to the promotion of the professional interests of the AIC members and the younger chemists who have not as yet become AIC members.

This quite different meeting from any we have ever had before is not the result of capriciousness on the part of your committee, but rather it is their intention and hope that this most informal occasion will promote greater friendliness amongst those who heretofore may have merely claimed "acquaintanceship" with many of their fellow members, and in addition, create a cohesiveness amongst us which will permit the

New York Chapter and the INSTITUTE to accomplish greater things than ever before. We hope that you will find it pleasant and that you will look forward to future meetings as an opportunity of continuing the friendships that will have started here.

The next meeting of the New York Chapter in December will be the annual Young Chemists Meeting, with a panel of outstanding speakers, each of them associated with a special field of the profession of chemistry. Their views as to the requirements and emoluments to be found in their particular fields should be of particular interest to the young chemist and undoubtedly will be of equal interest to those of us who like to know how the "other half lives." This meeting is always of benefit to the younger chemists and, in addition, it has been found that the INSTITUTE

## INTRODUCTION . . .

itself benefits by a number of applications for membership.

In January there is a meeting which, too, will be unusual but in another way. A Joint meeting will be held by the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS and the New York Section of the American Chemical Society. This, the first such combined meeting, is symbolic of progress and cooperative thought, with the American Chemical Society serving its membership through the advancement of the science of chemistry, and the INSTITUTE being devoted to the human beings who make up the profession of chemistry.

In March will come our annual Student Medal Meeting at which we shall have the pleasure of conferring upon a selected senior from each of the professional courses in chemistry in the New York area the INSTITUTE student award and a year's free membership in the INSTITUTE.

In May some New York chemist who has distinguished himself by his devotion to the profession of chemistry will be honored by receiving the New York Chapter's Honor Scroll.

In addition to the announced meetings throughout the year, your Chapter council and officers will continue to do all within their powers to advance the profession of chemistry. Efforts will be continued to establish an employment and counsel-

ing service which will be operated by and for chemists. Our activities for finding summer jobs for college students will be enlarged and will, we hope, be even more successful than during the past summer.

Your Chapter council and your officers feel very strongly that the membership at large will assume a much greater responsibility for, and activity in, the New York Chapter as acquaintanceship and friendship amongst the membership broadens. It will be their intention this year to see that the members at large are provided with the opportunity to serve and to establish new friendships.

To serve better, the INSTITUTE needs a full membership and an ample income. In a presidential address at an annual meeting of the INSTITUTE a few years ago, Foster D. Snell presented an equation which ran: "More members equal more income, more income equals more INSTITUTE activity." That equation still holds good, but it omits one other essential. Your help as an individual is essential, not only in obtaining more members, but by your participation in meetings.

---

**Demand:** Expected to continue strong in 1953 for conveyors and other types of mechanized materials handling equipment, according to Thomas Robins, Jr., president of Hewitt-Robins, Inc., 666 Glenbrook Road, Stamford, Conn.

## Presentation of Honorary AIC Membership to Dr. Kirkpatrick

**H**ONORARY AIC Membership was presented to Dr. Sidney D. Kirkpatrick, F.A.I.C., editorial director of *Chemical Engineering* and of *Chemical Week* and vice president and director of editorial development of McGraw-Hill Book Company, Inc., at a meeting of the New York AIC Chapter, held at Hans Jaeger's Restaurant, New York, N. Y., October 9th, where some four-hundred AIC members and guests participated in an "Old-Fashioned Bier Abend und Deutsches Dinner." Karl M. Herstein, F.A.I.C., chairman of the Chapter, presided.

Dr. Donald B. Keyes, AIC president-elect, consultant, author, and lecturer, under the title of "Keyes Kicks Kirkpatrick", showed slides made from snapshots in Dr. Kirkpatrick's private album (surreptitiously secured) which recorded such events in Dr. Kirkpatrick's life as his babyhood, his youth, his school days at the University of Illinois, as a lieutenant in the Sanitary Corps in World War I; as chemical advisor (1919) with the American Commission to Negotiate Peace, in Paris; as consultant on engineering to the War Manpower Commission (1942-45); as a mem-

ber of the Advisory Board of the U. S. Chemical Warfare Service (since 1935); as consultant to the U. S. Quartermaster Corps (1943-45); as consultant to the Technical Industrial Intelligence Committee Investigating Germany (1945); as consultant to the Secretary of War for "Operations Crossroads" at Bikini in 1946 (see cover picture); as consultant to the U. S. Atomic Energy Commission (since 1950); as the recipient of the Chemical Industry Medal and other honors; and as editor since 1921.

Dr. Lincoln T. Work, AIC president, presented the Certificate of Honorary Membership to Dr. Kirkpatrick, who responded, first, in keeping with the atmosphere of the meeting, by expressing his pleasure in German (see page 11), and then in English, by speaking on "Chemists Are Human Beings," (see page 7).

In honor of the occasion, W. S. Auchincloss, president of the Schnell Publishing Company, prepared a parody entitled "Kirkpatrick's Schnitzelbank", which was sung to the accompaniment of the German Band.

The citation on the Honorary

## PRESENTATION . . .

Membership scroll to Dr. Kirkpatrick reads:

*Outstanding editor, who by taking strong stands where needed for the good of the profession, promoting the Chemical Engineering Achievement Award, taking active leadership in professional societies, and encouraging younger men by speaking and guiding junior groups and individuals, has contributed to the professions of chemistry and chemical engineering far beyond the normal call of duty.*

---

**Sorbitol:** Subject of a management symposium, entitled, "An Industry Reports," held by the Atlas Powder Company at the Waldorf-Astoria, New York, N. Y., October 15th, attended by many representatives from industry. Dr. Sidney D. Kirkpatrick, Hon. AIC, editorial director, *Chemical Engineering*, presided. The rapid growth of sorbitol as a large volume industrial chemical was reported by Justin J. Alikonis for the candy industry; by Dr. Donald Powers of Warner-Hudnut, for the cosmetics industry; by Samuel Creselius of the U. S. Naval Research Laboratory for the resin industry; by Morris Kantrowitz of the U. S. Government Printing Office, for the adhesives industry; by Dr. R. C. Ernst of the Speed Scientific School, for the tobacco industry, and by Dr. Henry Royer Kreider of William S. Merrill

Company for the pharmaceutical industry.

Floyd Hosking, executive vice-president of the Corn Industries Research Foundation, spoke on "Corn as a Chemical Raw Material," and Charles W. Bowden, Jr., of Minneapolis-Honeywell Regulator Company, discussed "Quality Control of a Volume Chemical." Atlas Powder Company started pilot plant production of sorbitol in 1930. Today it is estimated that with the new plant unit opened recently at Wilmington, Del., Atlas can produce up to 75-million pounds of sorbitol annually as compared with the 1951 production of 22.5 million pounds.

---

**Creative Technology:** "Largely responsible for the position of the United States in world affairs today," Earl P. Stevenson, F.A.I.C., president of Arthur D. Little, Inc., Cambridge, Mass., told the American Association for the Advancement of Science at the St. Louis, Mo., meeting, December 29th. Creative technology "is the translation of new scientific knowledge into terms of useful devices." Creative technology is now largely dependent for its achievements upon a hybrid, the scientist-engineer.

---

**Returned:** Dr. Gustave T. Reich, F.A.I.C., consulting engineer, 1015 Packard Bldg., Philadelphia, Pa., from a trip to the West Indies, Costa Rica, Guatemala and Mexico.

# SEBACIC ACID

## THE CHEMICAL OF UNUSUAL VERSATILITY

SEBACIC ACID is one of the most versatile raw materials available to the chemical industry. The HARDESTY CHEMICAL CO. manufactures Sebacic Acid in two grades — both of which are available in tonnage quantities. The properties are given below:

### HARCHEM SEBACIC ACID

Sebacic Acid $\text{HOOC}-(\text{CH}_2)_{10}-\text{COOH}$	98% min.
Ash	0.10% max.
Moisture	0.15% max.
Iodine Number	0.4 max.
Melting Point	129° C min.
Specific Gravity 25°/15° C	1.110
APHA Color—2 grams dissolved in 50 ml. alcohol	80 max.

(C. P. grade is also available)

Sebacic Acid is a free flowing powder, white in color, with a high melting point. Its chemical reactions are similar to those of other aliphatic acids and it is easily converted to esters, salts, amides, ester-amides, acid chlorides and many other useful derivatives.

USES: Widely used in Plasticizers, Alkyd Resins, Fibres, Paint Products and other applications where its high heat stability and purity are of great advantage.

Write for further information

®



**HARDESTY CHEMICAL CO.,  
INC.**

41 EAST 42nd ST., NEW YORK 17, N. Y.

# Research Returns from Patents and Inventions

Dr. E. H. Northey, F.A.I.C.

*Assistant to the Vice President, American Cyanamid Company, New York, N. Y.*

(Presented at the A.I.C. Annual Meeting, May 8th, as part of the General Session, "Chemical Research — Management Viewpoint.")

LATE last Fall the *New York Herald Tribune* inquired into invention broadly, seeking among other facets of the subject the reasons for the decline in numbers of issued patents over the past fifteen years. The opinions of several men heading major research organizations were requested. My remarks are based largely on Dr. R. C. Swain's reply to that request and reflect opinions applying to the fields of chemistry and medicine rather than the whole scope of invention covered by the *Herald Tribune* study.

Let us first see the U.S. Patent Office records which were the cause of concern over the decline of invention. (Figure 1). It can be seen that the number of patents issuing annually declined from about 40,000 yearly prewar to half this number in 1947, but has again returned to about 40,000 in the last three years, part of this representing work-off of backlog of patents pending. The number of patent applications applied for declined from about 60,000 yearly prewar to 44,000 at the midpoint of the war (1943) but rose to a peak of

about 78,000 in 1946 from which, by 1951, it had declined to about its prewar level of 60,000.

The decline in numbers of patent applications applied for during the war can be partially accounted for by the diversion of large segments of our scientific and engineering manpower to defense research and development, much of which was classified. The filing of applications was deferred in many cases until after the war and accounts for much of the increase then. Another large factor was the sharp decline in number of foreign patent applications filed in this country caused by the war. The disruption in Europe continuing after the war has probably cut this source of applications to a low level which may have increased during the last year or so.

The much greater percentage decline in issued patents during the war and immediately thereafter was caused partly by a manpower shortage in the Patent Office. Perhaps more important, however, were the more rigorous tests for patentability which were applied in the patent office, spurred and



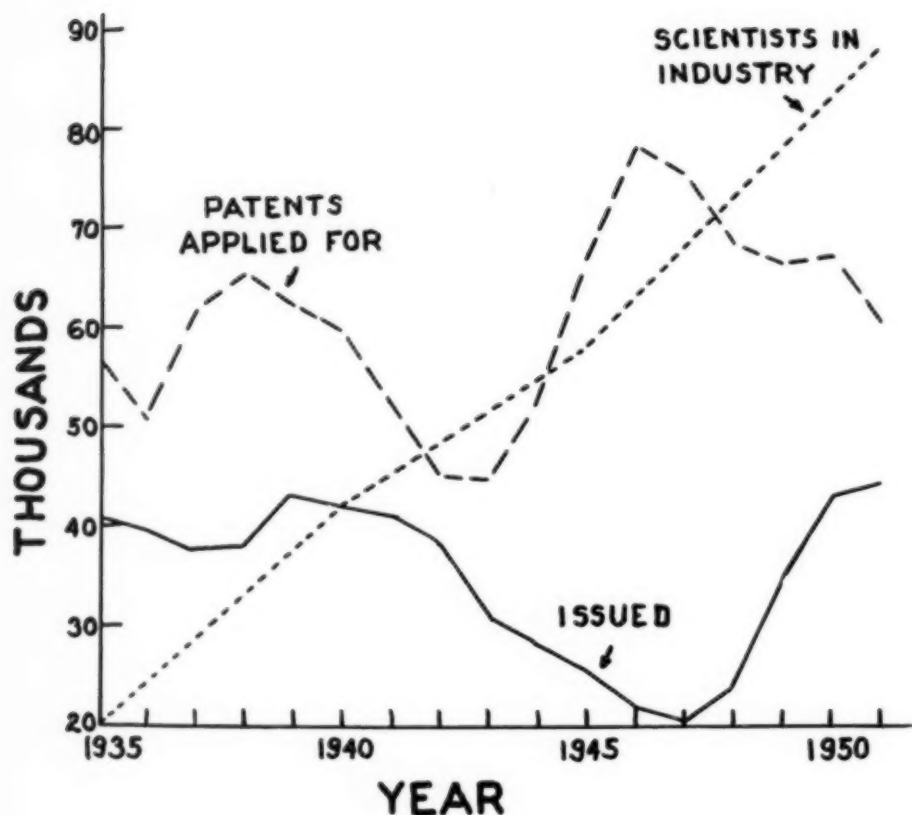


Figure 1

backed by a number of court decisions. These considerably increased the difficulty and expense of securing patents. Inventors with inventions of marginal novelty and usefulness were discouraged from submission of applications, and of the applications submitted a fewer number were issued as patents. The amount of additional

laboratory work required to demonstrate the utility or novelty of a patent application to the satisfaction of a patent examiner has increased enormously, particularly in the field of chemical patents. This has reacted to the hardship of inventors lacking strong financial backing who give up the application rather than face the expense



of fighting it through to issuance. The above factors give a trend towards fewer and perhaps better patents.

A trend in the opposite direction may result from present practice in interference proceedings which makes it almost impossible for the inventor who was late in filing to prove that he is entitled to the invention through having been first to reduce the invention to practice. Aside from the injustice which may be involved, this leads to hasty filing of inventions as a defensive measure before the scope and utility can be adequately explored. It increases the cost to the inventor by making more applications necessary. The public loses also in the added load on the patent office and the poorer disclosure of the invention that results.

### The Number of Patents

It is interesting to note that the number of patents issued yearly has not kept pace with the great increase in scientists employed in industry. Over a fifteen-year period the number of scientists in industry has increased fourfold and their number in any year is approximately matched by those in education and government combined. The number of engineers has almost doubled in that same period. Yet the number of patent applications applied for has remained static at an average of about 60,000 yearly while the number of issued patents has declined somewhat below the prewar average of 40,000. Thus,

## SCIENTIFIC LABORATORY FURNITURE EQUIPMENT

### Wood or Metal Catalogs Sent on Request

Our Engineers are readily available to assist in planning layouts, estimates, etc., without cost or obligation.  
Address—

*Newman Mfg. Co.*

J. A. Campbell, President  
5057 S. Center St. Adrian, Mich.  
Representatives in Principal Cities

in 1935, for each scientist in industry 3 applications were filed and 2 issued as patents. In 1940, 1-1/2 applications were filed and 1 patent issued per scientist in industry. By 1950, 3/4 of an application was filed and 1/2 patent issued per scientist.

Does this mean that scientists are becoming less productive of patentable new ideas? Has the law of diminishing returns caught up with industrial research? These are good questions to start an argument because much can be said on either side while the facts to settle the argument would require so much effort to unearth that it is unlikely anyone will undertake the job.

In my opinion, the number of pa-

tents issued is a poor criterion of the inventive output of the country, particularly in chemistry, because it is not too difficult to invent in chemistry in the sense of synthesizing new compounds. Usually, some potential use can be found and if sufficient effort is spent in prosecution, a patent will probably issue. Thousands of such patents issue yearly. Many are practically worthless except as contributions to chemical literature because no one makes use of the disclosure for reason of unsound economics. I, therefore, believe that the measure of invention lies not in numbers of issued patents but in number and volume of new manufactures produced, including the older products which have been notably improved either in quality or in reduced cost of manufacture.

On this basis the chemical and medicinal fields have had an impressive record. The past fifteen years have witnessed a complete revolution in medicine with more progress in treatment of disease with specific curative agents in this period than in all previous history. The sulfa drugs, antibiotics, vitamins and hormones have been the dramatic advances known to all, but there are a host of lesser drugs plus surgical and diagnostic aids and devices which have come into use in the same period.

Similarly, in the chemical field, synthetic fibers, plastics, insecticides, detergents and rubbers are some of the products that were either born or

made spectacular growth in the last fifteen years. Several of the leading chemical companies find that over 50 per cent of their dollar volume of business today is on products which were unknown in 1935.

### Co-operative Research

Thus, while I believe that the present and recent past has been the most productive period of research in all history, as far as chemistry and medicine are concerned, I believe also that there has been a very significant change in the nature of research and development. In the field of plastics, for example, it is not possible for one single individual to put a major new plastic on the market through his own efforts and knowledge. It requires a team of many specialists to make progress on such a complex research undertaking. When a new plastic is successfully marketed, it is difficult to establish which members of the team deserve greatest reward. It was probably an organic chemist who conceived and synthesized a new monomer. This may have been worthless until a physical chemist discovered how to stabilize the monomer during preparation so that it could be isolated and purified, or polymer chemists found how to polymerize the monomer to give desirable properties to the polymer. Still others found how to formulate it to give the right properties for molding. The physical testers, investigating the many physical properties required, noted and explored

## RESEARCH RETURNS . . .

some unusual properties which when subjected to further development studies became outstanding and accounted for much of the subsequent demand by the trade. Before the plastic could be offered to the trade, however, there was much further work by the development chemists and chemical engineers assisted by the analytical chemists, instrument engineers and others in revamping the process to cut costs, eliminates safety hazards, control both the monomer and polymer for uniformity, find the right materials of construction and get the bugs out of the initial plant production

### Rewards

Any individual or group solving one of the problems along the way to successful commercialization of the plastic was equally or perhaps more deserving of reward than the chemist who synthesized the new monomer. The point is, however, that without the contribution of each member of the team the chemist would merely have synthesized another monomer of the hundreds known which are useless for lack of successful development.


The proper rewards (financial or otherwise) for members of such a research team are exceedingly difficult to administer. Any undue reward to an individual will tend to destroy the teamwork which is most necessary to success. In my opinion, individual rewards of some size may be practical and beneficial in small organizations where much of the whole accomplish-

**IMECO**

**RECOMMENDS**

**MEAD  
IMPACT  
MILLS**  
SINCE 1877

**PULVERIZE**  
GRINDABLE AND  
UNGRINDABLE MATERIALS



FAST  
CONTINUOUS  
PRODUCTION  
QUIET  
LOW MAINTENANCE  
5 VERSATILE MODELS  
WIDE RANGE of MATERIAL  
& PARTICLE SIZES  
HIGH SPEED IMPACT

WET or DRY SAMPLES  
of YOUR MATERIAL  
TEST RUN at no charge.

PATENT PENDING  
COMPLETE ENGINEERING AND INSTALLATION AVAILABLE

**INDUSTRIAL PRODUCTS ENGINEERING CO.**  
Showroom: RA 9-6200 26-40 Jackson Ave.  
Long Island City 1, New York

ment may be concentrated in one man and where his contribution may be measured with considerable accuracy. In the large organization with highly diversified research activities and highly specialized personnel, individual rewards involve such dangers that they are not practical. If based on the net earnings of the development, no one will be happy working in highly competitive fields where the profits are known to be marginal. Yet from the overall company viewpoint such "bread and butter" business may be necessary and to stay in it one must keep ahead of competitors. Hence one must reward all who have done out-

standing work on an equitable basis regardless of field. This takes the form of advancement in salary and prestige. Another reward is a liberal publication policy which permits publication of research results as soon as major patent considerations have been satisfied. Liberal attendance at scientific meetings to present the results is part of the policy. It is important that the names of all who have contributed appear on the publications.

A further reward that should come to all who have worked on a new development is the satisfaction of seeing the product in the barrel and doing some useful function. This satisfaction is important because I know of nothing more discouraging to an inventor or research team than having carried through a development to find it shelved by management for any of many reasons. The usual reason is the financial considerations that with decidedly limited capital funds to invest in the business, these funds must be placed where the pay-off is most rapid.

The political climate has not been healthy for inventors, entrepreneurs or business men generally, for some time now, but the excess profits tax is particularly damaging to companies who have done an outstanding research job and wish to expand. With up to 82 per cent of the profits of a new undertaking going to the government, the pay-off time for the investment required is so stretched out that comparatively few of the com-

panies' research results can be put into production.

Great as have been the accomplishments and expansion in chemistry and medicine, it is my strong feeling that this has been despite the political handicaps which put such strong penalties on success. With a bit of encouragement our present accomplishments would look small alongside what might have been.

---

**Annual Convention:** Of the Association of American Soap and Glycerine Producers, Inc., will be held at the Waldorf-Astoria Hotel, New York, N. Y., January 27th to 29th. The annual Glycerine Research Awards will be presented at a luncheon on January 28th. The award judges are Dr. Sidney D. Kirkpatrick, Hon. AIC, editorial director of *Chemical Week*; R. T. Milner, director of the Northern Research Laboratory, and Dr. Roy Kienle, F.A.I.C., director of Application Research for American Cyanamid Company. The awards will be presented by Dr. John W. Bodman, F.A.I.C., technical adviser to the Board of Directors of Lever Brothers Company. The Convention theme is "How Much Change in '53?"

---

**Deferred:** Construction of the proposed new general office building for Monsanto Chemical Company, St. Louis 4, Mo.

# Industrial Aspects of Skin Cancer

Ernest L. Wynder, M.D.

*Department of Medicine, Memorial Center for Cancer and Allied Diseases,  
New York, N. Y.*

(Presented at the AIC Annual Meeting, May 8th, as part of Concurrent Session E, "Industrial Safety and Hygiene.")

**I**NDUSTRIAL aspects of carcinoma of the skin play a unique role in the history of cancer. They represent the very foundation on which the first experimental work with coal tars was based. In 1775, a British surgeon, Sir Percival Potts, noted a high incidence of scrotal cancers among chimneysweepers. In 1916, two Japanese workers spurred by this clinical observation demonstrated experimentally the carcinogenic properties of coal tar and thus opened a new field of cancer research.

Present day concepts of the origin of cancer are manifold, but whatever our favorite theory may be, there can be no denial that some form of specific irritation plays a basic role in the induction of some forms of cancer. Among these cancers the epidermoid type of cancer seems most closely related to factors of irritation, and among these, carcinomas of the skin are highest in incidence. It is an established clinical and experimental fact that epidermoid skin cancers arise but uncommonly spontaneously in the absence of an exogenous factor of irritation.

It is the purpose of this discussion to outline these exogenous factors in relation to skin cancer and to show how by their possible elimination, or at least reduction, how we may succeed in lowering the high incidence of cancer of the skin.

## **Suspected Etiologic Factors**

**Ultraviolet Light:** The observation that sunlight may play a role in the induction of carcinoma of the skin was made as early as 1894, an observation which now is quite generally accepted. The geographic distribution of skin cancers with their far greater incidence in southern areas, their anatomic site with a greater distribution in areas exposed to the sun, and their greater incidence among those groups of people who have a great exposure to sunlight as well as their greater incidence among the fair-skinned people leaves little doubt in this respect.

Agricultural workers have the highest incidence among workers. In a large British survey of 5,915 skin cancer cases, the percentage ratio of skin cancer among agricultural workers was 142.4 as compared with 94.4

for miners and 47.5 for professional men (<sup>1</sup>). Among the agricultural workers, the gardeners and gardener laborers had the highest ratio with 198. Among professional men, civil engineers and surveyors were highest with 121.3, while among miners, the metal miners were highest with 118.0. From the latter data it may be seen that in addition to sunlight other exogenous factors play a role, factors to be discussed subsequently. There appears to be little doubt, however, that sunlight represents the most common exogenous irritation in the induction of carcinoma of the skin. The effect of ultraviolet light upon the development of this cancer must be considered in the evaluation of any industrial agent suspected of carcinogenic properties.

*Industrial Factors:* There are numerous industries with a high incidence of skin cancer, even though the actual frequency with which skin cancer is reported in these industries may be misleading from the number of cases that have actually been recorded. This is primarily due to the fact that few industrial concerns keep accurate records of the number of cancer cases that may occur among their workers. This difficulty is enhanced by the fact that many skin cancers have a long latency period so that a worker may develop an occupational cancer after his employment in a given industry has ended and thus his particular case may never be recorded

unless a special follow-up system were used. It is thus not surprising, as Hueper recently pointed out, that so far only 71 tar and pitch cancers, 62 grease and oil cancers, and only 18 arsenic cancers of the skin have been reported in the United States (<sup>2</sup>). These numbers would undoubtedly be much higher as may be deduced from subsequent British data if a better system of recording and reporting could be instituted. Hueper, who has done much to bring the dangers of occupational cancers to the attention of industry and the public, considers the following substances as carcinogenic to the skin: anthracene (crude), arsenic, asphalt (artificial), mineral oil, shale oil and spindle oil, as well as paraffin oil (crude), radioactive substances, roentgen rays, soot, tar, and ultraviolet light. He also considers thermic burns as an established carcinogenic factor.

Data for most of these substances have recently been well-documented in a report by Henry, who was formerly chief medical inspector of factories in England (<sup>3</sup>). The adequacy of these data depended on the reportability of these cancers. As early as 1907, cancers of any cutaneous site that could have been caused by the handling and use of pitch, tar, or tarry compounds were included in the Workmen's Compensation Act and were thus reportable. In 1914 bitumen, mineral oil and paraffin were added to this list for the purpose of compensation. In

**Table I: Total Number of Sites With Percentages of Exposed and Unexposed Sites**

Suspected Carcinogenic Substance	Total Number of Sites (3,898)	Sites	
		Exposed	Unexposed
Pitch	746	78.5	21.5
Tar	128	58.6	41.4
Pitch and Tar	1,445	76.0	24.0
Creosote Oil	39	64.1	35.9
Anthracene	5	100.0	0.0
Shale and Mineral Oil	1,535	30.6	69.3

(From S. A. Henry, M.D.)

1920 it was specifically pointed out in the existing Factory and Workshop Act that all of the cutaneous cancers occurring following exposure to the above substance should be reported. It was felt that thus better data could be obtained and preventive measures devised.

The British data show that up to 1945 skin cancer cases were reported in 2,975 workers. Of the cases, 59.4 per cent were thought to be due to pitch, tar, or tar products, while 40.3 per cent were in workers exposed to shale oil, mineral oil, or bitumen. In nine cases there were miscellaneous exposures to several suspected carcinogenic substances.

Table 1 shows the total number of sites involved in workers exposed to the various suspected carcinogenic agents. It may be of interest to list the types of work in which these workers were involved. There are at least several occupations where the lay person might not suspect exposure to such agents as pitch, in trades such as the making of optical lenses and in the manufacture of electrical equipment. The following trades or manu-

facturing processes were listed by Henry with the number of sites involved:

Pitch: Patent fuel (640), Pitch-loading (55), Electrical equipment (34), and optical lenses (17).

Tar: Cable-making and laying (25), net fixing (21), proofing of fabric (9), making of roads and road material (23), oil gas (10), producer-gas (17), coal-carbonization (11), and miscellaneous (12).

Pitch and Tar: Tar-distilling (1,001), gasworks (331), and coke-ovens (113).

Creosote oil: Creosote storage and proofing of timber (27), bricks and pottery (12).

Anthracene: Purification of anthracene (5).

Shale oil and Mineral oil: Cotton (1,419), refining of shale oil and mineral oil (57), metal working (40), wool and worsted (6), miscellaneous (13). A few general comments appear in order. Before one can incriminate any given agent as being carcinogenic, one must be certain that there have been no other suspected agents in the workers' past history. Workers in



coal tar plants may also have some exposure to lubricating mineral oils as may have workers involved in metal work. Thus complete and detailed histories of exposures must be obtained before one given agent can be solely held responsible.

Workers not in immediate contact with the suspected agent may also come down with an occupational skin cancer. Henry reports a skin cancer in a time clerk who worked in a plant which produced coal tars for over forty years. In general, it is a fact, however, that the more closely a worker is exposed to these agents, the greater will be his chance of developing skin cancer.

In this respect it must also be recalled that according to our present concepts carcinogenic agents are specific. That is to say, chronic irritation *per se* is not carcinogenic, but this effect is due to a specific agent within a given substance or group of substances. The greater the potency and concentration of this agent, the greater is the cause of skin development.

The British report is complete as far as agents are concerned that were reportable under the Factory and Workmen's Act. There are several other industrial agents that may give rise to skin cancer as previously outlined.

These agents include in particular, arsenic. The high incidence of skin cancer in gardeners over and above that of other agricultural workers has

been suspected to be due to their exposure to arsenical insecticides. Hill and his co-workers recently studied the incidence of cancer in a British factory which produced arsenic powder<sup>(4)</sup>. They showed that the incidence of cancer in this factory was three times greater than in a control factory and that the increase was due chiefly to a higher incidence of lung and skin cancer. In a recent American study involving a factory handling arsenic trioxide, no significant increase of skin cancer was noted among 146 deaths which included eighteen cancer deaths<sup>(5)</sup>.

Radioactive substances and X-rays may also cause skin cancer, even though this involves but few industrial procedures. Exposure to radium and X-rays, especially of the low voltage type may certainly lead to skin cancer as may be seen from the incidence of this disease among physicians who, particularly in early days when protective measures were carried out but poorly developed, not infrequently had skin cancers.

Finally, scars resulting from burns are to be considered as a predisposing factor to cancer formation. In such workers, of course, careful histories as to occupational exposure should always be taken. This applies, for example, to Wanick's belief that heat *per se* may induce skin cancer<sup>(6)</sup>. He proposed this concept because he noted a high incidence of skin cancer among some foundry workers. Such



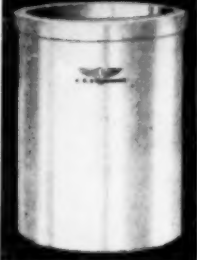
## INDUSTRIAL ASPECTS . . .

workers are, of course, also exposed to metal dust and coal dust. This re-emphasizes the point that before any given agent can be incriminated, thorough studies have to be made to rule out other possible carcinogenic factors. More complete records might well reveal other industrial agents that play a role in skin cancer formation.

Table 1 shows that in the majority of cases the exposed sites were most frequently involved. This observation is in line with the concept that the greater the exposure of a certain area, the greater will be the chance of cancer development. When one surveys the unexposed sites separately, one finds that over 95 per cent of these cases occur in the scrotum. These scrotal cancers occur now most commonly in cotton workers. Among 723 cases of scrotal cancers recorded in England from 1911 to 1940, there were 415 cotton mule spinners, 118 chimneysweepers, while gas, tar pitch and creosote workers accounted for 114 cases (7). The great predilection for the scrotum as a skin cancer site in certain industrial operations depends not only on poor hygiene in this specific region but also on the skin ruggae, hair follicles, and sebaceous glands in which the carcinogenic agents can move adequately to localize.

**Latency Periods:** It is a well-known feature of carcinogenesis that there is a latency period between the

**WHITE CHEMICAL PORCELAIN**



**ACID  
STORAGE**  
AND  
**MIXING POTS**

... resist all chemicals except hydrofluoric acid and hot caustic ... are low in cost ... have leak-proof, one-piece construction ... are non-absorbent and non-contaminating ... do not deteriorate ... "wash down" easily ... require no maintenance ... are available in 5 to 200 gallon sizes ... can also be used for foods, drugs, distilled water.

*Write, today, for further details.*

72-D

**THE U. S. STONEWARE CO.**  
60 E. 42ND ST. NEW YORK

first contact with a known carcinogen and the first appearance of the cancer. This period is in direct proportion to the potency of the carcinogen and varies in indirect proportion to the resistance of the host. There have been a few isolated skin cancers reported a year after contact with tar and pitch, but isolated cases are difficult to evaluate. The first significant rise among these workers is noted after about five years' exposure, while this same incidence is only reached after about thirty years by workers exposed to shale and/or mineral oil. The maximum number of cases in Henry's series among pitch and tar workers occurred from twenty to twenty-four years after first exposure, while this figure for the shale and

mineral oil workers was fifty to fifty-four years.

These data are also indicative as to how far we have to go back in a patient's history in order to obtain accurate information and also shows how long we have to follow workers before we can be certain that a given industrial substance is or is not carcinogenic to man.

*Clinical Aspects:* The clinical appearance of industrial skin cancer does not differ from that of other skin cancer of similar histologic types. Skin cancer may first appear as a papilloma or as an area of hyperkeratosis which remains unchanged for months or even years and may then proceed to rapid growth or a lesion which may grow vigorously from its first clinical appearance. The lesions may also be noted at times as a small nodule in the dermis which then may break down and form an ulcer, or they may start as a flat, indurated invasive tumor. It is important to be aware of this variety of early picture, since in its early recognition and proper therapy lies the cure of these cancers.

Of the two basic histologic patterns the survival rate of the basal cell cancer is somewhat greater than that of the epidermoid type. In Henry's series the latter type in untreated cases caused death from two to three years, while the former types caused death from seven to twenty years. If treated early, the cure rate is high. Early treatment which can either be surgery

or radiation therapy has a five year survival rate of between 85 to 95 per cent of the basal cell cancers and from 70 to 80 per cent of the epidermoid cancers.

*Preventive Measures:* Preventive measures seem clearly at hand as far as industrial skin cancer is concerned. If industry should tackle this job well much could be done to lower the industrial skin cancers. Each industry should thoroughly survey the incidence of skin cancers among its workers. This applies in particular to industrial concerns that employ suspected carcinogenic substances. Such concerns should carry out special follow-ups of their workers in view of the latency periods of skin cancers. These follow-ups should include workers that have already left the company. Obviously, this is only practical for those workers in which a high incidence might be suspected. The final data should be broken down into workers employed in various specific jobs rather than considering the incidence at the whole plant, since the latter data might dilute the data of a group of workers in a small section with a high incidence of skin cancer. This set-up should be controlled by people trained for this job and who are fully conscious of the importance of this work, for the results of such a project cannot be better than the interest and faith of the person in charge.

Once it has been established that a certain exposure in a given industry

## INDUSTRIAL ASPECTS . . .

has a high incidence of skin cancer, a number of protective and preventive measures should be immediately instituted. These should include the following:

(1) A routine three months' compulsory medical examination of these workers by a qualified physician.

(2) Instructions to the workers to include a program of health education designed to make the workers conscious of the possible dangers of skin cancer and to make it clear that proper hygiene will markedly lessen such dangers. Such hygienic measures should include the daily changing of clothing, the availability of showers as well as that of protective garments and equipment.

(3) The company may institute a system of rotation among workers most exposed to suspected carcinogenic agents. This should in particular involve workers who have already developed cancerous or precancerous lesions of the skin and workers whose skin seems to be especially sensitive to the suspected agents.

(4) If possible, the industry should develop a closed production system to involve the particular industrial process during which the workers are most likely to come into contact with the suspected carcinogenic agents.

(5) If a given agent has an especially high incidence of skin cancer which cannot be controlled by the above measures, steps should be considered by means of which this agent

---

### MONTCLAIR RESEARCH CORPORATION

Established 1941

*Research and Consulting Chemists*

4 Cherry Street                      Montclair, N. J.  
Telephone MONTclair 2-3510

---

could be eliminated from the industrial procedures or by means of which it could be reduced.

(6) Workers exposed much to sunlight, particularly those who are fair-skinned and thus especially sensitive to the ultraviolet rays, should protect themselves with wide brimmed hats. They should also use protective ointments. According to Blum, those ointments which contain titanium oxide as a scattering agent and phenyl salicylate as an ultraviolet absorbant are most effective (\*).

A few examples as to how some industrial concerns have faced some of these problems appear in order. W. E. Smith cites an example from the British shale oil industry (\*). A few decades ago one-half of the workers in a given British refinery had numerous skin cancers. Subsequently the plant employed a physician to study these problems. He noted that the majority of the skin cancers developed in men employed in the wax-pressing operations. These waxes which contain much oil were spread by the workers with their bare hands. It was in the areas of hands and forearms that most of the skin cancers developed.

It was also noted in the process of examining and recording data that workers with light, dry skin and blondish or reddish hair developed the most skin cancers. Consequently, the plants instituted new regulations which included the installation of closed presses, the institution of hygienic measures, such as barrier creams and washing facilities, and the transfer of the apparently more susceptible individuals to other jobs. While in 1920, 65 skin cancers were recorded in this particular company; in 1950 no skin cancers occurred.

Data from cotton mills serve as an example as to how substitution procedures may be effective. In British cotton mills shale oil is being used for lubricating the spindles. In England the incidence of skin cancers in this occupation group is high as previously noted. The cotton industry in the United States, however, where the incidence of skin cancer has not been found to be abnormal, oils derived from petroleum are being used as lubricating oils.

A final example which denotes a particular awareness of American industry concerns that of high boiling point fractions of petroleum which have been found to be carcinogenic. The Standard Oil Company conducted special tests to determine the carcinogenicity of these substances. These tests were conducted together with independent investigators especially trained in the testing of suspected carcinogenic substances in laboratory

animals (<sup>10</sup>, <sup>11</sup>). These tests were conducted because it was suspected that these substances might be cancer-inducing. When this was found to be the case, steps were advanced to eliminate or at least reduce these substances from the industrial process (<sup>12</sup>). This is an example of preventive medicine in its finest light.

The suggestions brought forth and the examples cited indicate how industry can play a vital role in the reduction of skin cancer as well as of other cancers related to industrial exposures.

### Conclusion

In the United States the problem of industrial cancer has only recently come into the foreground. In general, it is not as well-documented in this country as in many European countries. Present state laws in most instances do not require to report industrial cancer cases. Compensation laws as established in England appear indicated not only because workers developing a proved occupational skin cancer have received this as much in the line of their work as a fractured bone but also because such data would throw new light on human carcinogenesis. Even if present laws do not demand such data, industries should on their own accord collect such information and follow the suggestions advanced not only for the protection of the workers but also for the advancement of cancer work in general. Each industry should become fully conscious of occupational cancers within their ranks, and once such

cancers have been noted, proper steps should be taken leading to their reduction.

In cancer, as in all other diseases, prevention is the ultimate of success. If such preventive measures are practiced with all our efforts, we can drastically reduce the incidence of industrial skin cancers. If we succeed in this goal, I believe that both workers and industry will have equally benefited, and our common aim—the reduction of human cancer—will have advanced another step.

#### BIBLIOGRAPHY

- (1) Atkin, M.; Fenning, J.; Heady, J. A.; Kennaway, E. I.; Kennaway, N. M. Mortality from cancer of skin and lip in certain occupations. *Brit. J. Cancer* 3:1-15, 1949.
- (2) Hooper, W. C. Environmental and occupational cancer. *Pub. Health Rep. Suppl.* 209, 1948.
- (3) Henry, S. A. Occupational cutaneous cancer attributable to certain chemicals in industry. *Brit. Med. Bul.* 4: 389-401, 1947.
- (4) Hill, A. B. and others. Studies in incidence of cancer in factory handling inorganic compounds of arsenic: mortality experience in factory clinical and environmental investigations. *Brit. J. Indust. Med.* 5:1-15, 1948.
- (5) Snegireff, L. S.; Lombard, O. M. Arsenic and cancer: observations in metallurgical industry. *Arch. Indust. Hyg.* 4:199-205, 1951.
- (6) Wanick, H. Zu den beruflichen Schädigungen durch strahlende Wärme in Walzwerken: Hautkrebsbildung. *Arch. f. Gewerbepath u. Gewerbehyg* 10:486-490, 1941.
- (7) Kennaway, E. L.; Kennaway, N. M. The social distribution of cancer of the scrotum and cancer of the penis. *Cancer Research* 6:49-53, 1946.

### Available

ISO-AMYL NITRATE

N-BUTYL NITRATE

TETRANITROMETHANE

O. JOHNSON & E. SCUDDER

92 ORCHARD STREET

Bloomfield, N. J.

- (8) Blum, H. F.; Eicher, M.; Terus, W. S. Evaluation of protective measures against sunburn. *Am. J. Physiol.* 146:118-125, 1946.
- (9) Smith, W. E. Survey of Some Current British and European Studies of Occupational Tumor Problems. *AMA Archives of Industrial Hygiene and Occupational Medicine.* 5:242-263, 1952.
- (10) Smith, W. E.; Sunderland, D. A.; Sugiura, K. Experimental analysis of the carcinogenic activity of certain petroleum products. *AMA Arch. Indust. Hygiene & Occup. Med.* 4:299-314, 1951.
- (11) Fischer, H. G. M., et al. Properties of high boiling petroleum products; physical and chemical properties as related to carcinogenic activity. *AMA Arch. Indust. Hyg. & Occup. Med.* 4:315-324, 1951.
- (12) Holt, J. P., et al. A cancer control program for high boiling catalytically cracked oils. *AMA Arch. Indust. Hyg. & Occup. Med.* 4:223-334, 1951.

**Meeting:** Of the Society for Applied Spectroscopy, February 3, 1953, at the Socony-Vacuum Training Center, 63 Park Row, New York, N. Y. Subject: "Contributed Papers by Society Members."

**The Impact:** Of scientific research on our lives will be greater than anything experienced before this period, said Dr. James R. Killian, Jr., president of Massachusetts Institute of Technology, speaking at a luncheon following the dedication of Lever Brothers Company's Research Center, Edgewater, N. J., November 18th. "In 1915 there were about 100 research laboratories in the United States. Today there are some 3,300, employing about 165,000 people. In the past two decades research expenditures . . . have multiplied over ten-fold, and today the United States is spending nearly three billion dollars on research . . .

"This expenditure on research marks a new level of appreciation of the benefits to be obtained from applied science . . . From 1939 to 1950 industry increased its use of power 134 per cent. Today American industry produces nearly one-half of the world's goods with only seven per cent of the world's population, and the curve of our productivity is still moving up.

"Our industrial expansion is unprecedented. By the end of this year, fifty per cent will have been added to industrial capacity since 1945, the largest relative gains having been made in electrical machinery, non-electrical machinery and chemicals . . .

"As we look ahead we can expect this pace to quicken—if for no other

reason than because of the new level of expenditure on research. Large-scale research has added a powerful new hormone to our economy. We need only to look at the impact of the development of synthetics on all segments of our economy, to realize what science can bring in the way of unpredictable and fundamental change."

---

**Chosen:** Dr. Charles Allen Thomas, Hon. AIC, to receive the Perkin Medal of the American Section of the Society of Chemical Industry, for 1953. He is president of Monsanto Chemical Company.

Dr. Thomas is honored for outstanding contributions to many phases of industrial chemical development, including: The atomic energy program; several phases of the development and utilization of anti-knock, high compression fuels for internal combustion engines; contributions to the knowledge of the chemical reactions of hydrocarbons in the presence of catalysts, particularly aluminum chloride; synthesis of resins and other useful products from petroleum and its by-products; fire fighting devices and methods; as well as for his leadership in both the profession and industry of chemistry.

---

**Moved:** To larger and more modern headquarters, at 260 Madison Avenue, New York 16, N.Y., Witco Chemical Company.

## An Employment Advisory Service II

Dr. William I. Harber, F.A.I.C.

*Councillor, Chicago AIC Chapter*

IN the May 1950 issue of THE CHEMIST there appeared an article of the selfsame title embodying a talk given in April 1949 before the Chicago Chapter. The article suggested setting up some device whereby a member considering employment with an organization could seek out the assistance of fellow-members of the AIC in obtaining helpful advice on the advantages and disadvantages of employment with said organization. It was felt that this sharing of experiences would assist the applicant in making a more judicious decision. The article also contained a tentative questionnaire listing information to be supplied by advisors. This information was to be made available to the applicant.

At first, the reaction of the Council of the Chicago Chapter was that the maintaining of a file of evaluations of organizations by present and past employees was an undesirable practice. The question arose of exposing the Chapter to legal suit should some information operate to the disadvantage of an organization on file. Legal opinion was sought and furnished by Donald H. Sweet, F.A.I.C. Mr. Sweet reported in part as follows:

"Accordingly, as a matter of law, it

is my opinion that if you circulated such questionnaires as you have outlined, and tabulated the information, and restricted it to persons who identify themselves to you and give you written assurance of a *bona fide* reason for desiring the information, and that they would keep the information confidential, it is my opinion that you would be clear of any legal liability to any firm on whom you reported, unless definite malice or fraud could be proven."

The Chicago Chapter then decided to give the Employment Advisory Service a trial after agreement had been reached on a satisfactory mechanism. The Secretary sent out the following notice on December 1, 1951:

Dear Chapter Member:

By action of the Chicago Chapter Council there has been set up an "Employment Advisory Service." The purpose of this service is to make available to each member seeking employment with a particular organization the present or past experience of other AIC members who are working or have worked for that particular organization. The information exchanged between both parties will be the concern of the parties only and no records of information will be kept. Such a service it is felt will help AIC applicants to make a sounder choice of intended employers.

The procedure for using the service is as follows:



1. Obtain a request for use of the service from the Secretary. Fill out the form and enclose 50 cents for use of the service.

2. The Secretary will send you names of AIC members qualified to advise you about the organization(s) in which you are interested.

Please fill out the enclosed cards on all organizations by whom you have been employed and about which you wish to act as advisor. REMEMBER! The success of this plan depends on having all members participate as advisors.

PLEASE NOTE: All information exchanged between applicant and advisor will be known only to them. No records of contacts between applicants and advisors will be kept by the Secretary. You are in no way endangering your present position by acting as advisor. You are offering a helping hand to a fellow AIC member. Some day you may need some advice yourself.

As of June 1952, the Secretary of the Chicago Chapter reported as follows:

No. of persons reporting . .	71
No. of cards received . . . .	150
Percent of dues paying members reporting . . . .	31
No. of companies for which advisors could be furnished	117

The secretary reported that the comments received from the members were all favorable. At the time of his report, however, no requests had as yet been made for use of the service.

The Council of the Chicago Chapter felt that this activity should be mentioned in *THE CHEMIST* so that other Chapters might set up such a service. It was thought that there could be inter-Chapter exchange enabling members of other Chapters to

use the service established by the Chicago Chapter and vice versa. Comments and suggestions are solicited. (They may be sent to Dr. W. I. Harber, Research and Development Corp., 21 E. Van Buren St., Chicago 5, Illinois.)

**Careers in Petroleum:** Theme of the 1952 Oil Progress Week Luncheon held in New York, N. Y., October 14th. The master of ceremonies was W. Chalmers Burns, president, Hartol Petroleum Corporation. The speakers were Miss Carol L. Eberhart, president of The Desk and Derrick Club (New York); Arthur C. Hankinson, independent gasoline retailer, and P. C. Spencer, president of Sinclair Oil Corporation.

"The oil business employs close to two million persons," Mr. Spencer stated, "and offers young men and women a choice of more than 4,000 different kinds of jobs with thousands of prospective employers who are in competition with each other. From the standpoint of remuneration, these jobs pay just about the highest scale of wages and fringe benefits . . . Last year the oil business provided much steadier employment than the average American industry . . . The National Oil industry Information Committee . . . (has) established a program in high schools, designed to interest young people in the petroleum industry and its career possibilities."



## In Memoriam

### H. N. Ipatieff

Funeral services were held at Chicago, Ill., December 1, 1952, for Professor Vladimir N. Ipatieff, F.A. I.C., world-famed petroleum chemist and director of chemical research for Universal Oil Products Company.

Professor Ipatieff, who celebrated his eighty-fifth birthday on November 21st, passed away November 29th following a short illness. He had been associated with Universal for more than twenty-three years, ever since he left his native Russia with whose policies and philosophies he disagreed.

He was generally regarded as the world's foremost authority in the field of catalysis and it was in this area that he devoted the major portion of his remarkable career. He is particularly known for his fundamental research and development on the processes which contributed to the development of high octane aviation gasoline—alkylation, polymerization, and isomerization.

It was the development of these processes which enabled the Allies to gain the upper hand in the aerial war against Germany during World War II and led to the eventual destruction of German aerial strength.

In addition to his work for Universal at their Riverside, Illinois, laboratories, Prof. Ipatieff was an active member of the faculty of

Northwestern University, where he set up and supervised the Ipatieff High Pressure and Catalytic Laboratories, the only unit of its kind on the campus of any American university.

Professor Ipatieff was born in Moscow, Russia, in 1867, and attended a number of military schools there. But throughout his schooling period, he maintained an active interest in chemistry, and after his graduation from the Michaelovsky Artillery Academy, continued with the academy as a chemistry professor. Four years later, in 1896, the academy sent him to Germany and France for further study in chemistry.

While he achieved world-wide recognition for his chemical research in Russia, it was during the latter period of his life, spent in the United States, that he felt that he reached his greatest accomplishments.

During his lifetime he received many honors and awards for his scientific accomplishments, the most recent of which were two French citations which he received last year; one making him a Chevalier of the Cross of Lorraine and a Companion of the Resistance, and the other an appointment as a member of the French Association of the Knights of Cyprus and Jerusalem. Both these awards were granted in recognition

of his work on high octane aviation gasoline during the last war. The Chicago Chapter of The American Institute of Chemists awarded him its Honor Scroll in 1942.

Prof. Ipatieff is survived by his widow, Varvara, and a son and daughter both of whom live in Russia.

—James W. Lee

---

**Established:** The V. N. Ipatieff Research Professorship in Organic Chemistry at Northwestern University by Universal Oil Products Company, Des Plaines, Illinois. The Company plans to grant the university \$25,000 a year. The professorship is named in honor of the late Professor Vladimir N. Ipatieff, F.A.I.C., who was director of chemical research at Universal and director of the High Pressure and Catalytic Laboratory at the Northwestern Technological Institute.

Professor Ipatieff, holder of a hundred U. S. patents and author of scores of scientific publications, personally contributed more than \$56,000 to Northwestern toward the establishment of catalytic and high pressure laboratories, and initiated the \$3,000 Ipatieff Prize in Chemistry to be awarded every three years by the American Chemical Society to a chemist under forty years of age.

**Fellowships:** Offered by Armour Research Foundation of Illinois Institute of Technology, 35 W. 33rd St., Chicago 16, Ill., in physics, chemistry, chemical engineering, metallurgy, ceramics and minerals, engineering mechanics, and electrical engineering. Awards are made on competitive basis to U.S. citizens, under 28, holding B.S. degree. Request application forms from the Office of Admissions, Graduate School of Illinois Institute of Technology.

---

**New Fellowship:** The Bersworth Fellowship in Chelate Chemistry, established by the Bersworth Chemical Company to "encourage research on metal chelates and on the control of cations in solution in the fields of pure chemistry and its applications to industry, agriculture and medicine." The fellowship provides one year of graduate study at any accredited institution of the student's choice in the United States or under the jurisdiction thereof. The stipend is \$3,500. Application forms may be obtained from Dr. Arthur E. Martell, Clark University, Worcester, Mass.

---

**Methanol Plant:** To be built at Texas City, Texas, as a joint undertaking by Heyden Chemical Corporation and Monsanto Chemical Company. The plant will approximate 25-million gallons per year capacity. Commercial production will begin in January, 1955.



## COUNCIL

### OFFICERS

*President*, Lincoln T. Work

*President-elect*, Donald B. Keyes

*Secretary*, Lloyd Van Doren

*Treasurer*, Frederick A. Hessel

### COUNCILORS

John R. Bowman, *At-Large*

Emmett B. Carmichael,

*Alabama Chapter*

C. C. Concannon, *At-Large*

M. L. Crossley, *At-Large*

T. R. Donlan, *New Jersey Chapter*

Gustav Egloff, *Chicago Chapter*

L. H. Flett, *Past President*

Milton Harris, *Washington Chapter*

M. J. Hiler, *Ohio Chapter*

L. B. Hitchcock, *At-Large*

H. O. Kauffmann, *Niagara Chapter*

M. J. Kelley, *New York Chapter*

R. H. Kienle, *At-Large*

Harold A. Levey, *Louisiana Chapter*

John H. Nair, *At-Large*

H. A. Neville, *At-Large*

Donald Price, *At-Large*

M. Sittenfield, *Pennsylvania Chapter*

Foster D. Snell, *Past President*

Raymond Stevens,

*New England Chapter*

Manuel Tubis, *Los Angeles Chapter*

Florence E. Wall, *At-Large*

Albin Warth, *Baltimore Chapter*

#### National Council Meetings

Meetings of the AIC National Council are scheduled to be held at 'The Chemists' Club, 52 East 41st St., New York, N. Y., at 6:00 p.m., on the following dates:

January 14, 1953

March 11, 1953

April 8, 1953

May 11, 1953 (Philadelphia, Pa.)

**Associated:** Dr. Robert C. Hockett, F.A.I.C., with Arthur D. Little, Inc., Cambridge, Mass., consulting research and engineering firm. Dr. Hockett was formerly scientific director of the Sugar Research Foundation, from 1943 to 1952, where he planned, organized and administered nearly eighty research projects in the fields of nutrition, food technology, by-product utilization, physiology and medicine.

## AIC Activities

### C. P. Neidig, F.A.I.C.

**Planned:** By the Los Angeles Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, an AIC Luncheon, to be held during the American Chemical Society's meeting in Los Angeles, March 16th to 21st. All AIC members attending the meeting are welcome. For information, write T. F. Bewley, c/o Braun Corporation, 2260 E. 15th St., Los Angeles, Calif.

**Joint Meeting:** To be held by the New Jersey Chapter of THE AMERICAN INSTITUTE OF CHEMISTS and the North Jersey Section of the American Chemical Society, February 16th.

Dr. George Royer, F.A.I.C., past chairman of both organizations will give a brief talk on "American Chemical Society Professional Activities." Dr. Royer will explain the relationship of the AIC to the ACS and will give a resume of recent professional activities of the ACS, including current developments with respect to the licensing of chemists.

Following Dr. Royer's talk the regular topical group meetings will be held. The INSTITUTE is jointly sponsoring with the Industrial and Engineering Group a panel discussion on "How to Start Your Own Business." For additional information write David Young, Esso Laboratories, P. O. Box 51, Linden, N. J.

## Chicago Chapter

*Chairman, Dr. B. S. Friedman*  
*Chairman-elect, H. F. Schwarz*  
*Vice chairman, Mary Alexander*  
*Secretary-Treasurer, W. Jacobson*  
*Representative to National Council, Dr. Gustav Egloff*

The Chicago AIC Chapter held its first program meeting on December second at the Chicago Engineer's Club, where a panel discussion was held on "A Free Market for Chemists?" The speakers were Dr. Roger Adams, Hon. AIC, head of the Chemistry Department of the University of Illinois; Edgar B. Carter, F. A.I.C., executive director of research, Abbott Laboratories, and Dr. Roy C. Newton, F.A.I.C., vice president, Swift and Company. (The papers presented have been promised to THE CHEMIST for later publication.)

The meeting was attended by seventy-five people. Following the dinner, everyone stood up and introduced himself, a custom prevalent in other professional societies but new to the Chicago Chapter, where it proved to be a desirable way to "break the ice."

The chairman spoke briefly in memory of the late Professor Ipatieff (see page 35).

The discussion following the program was reported to be "somewhat lacking in fighting spirit," inasmuch as the reporter felt that chemists are prevented by employers from changing jobs as they would like to do, but the audience scarcely challenged a denial of such practices.

## Los Angeles Chapter

*Chairman, T. F. Bewley*  
*Vice Chairman, Peter Stupin*  
*Corresponding Secretary, Blanche Simons*  
*Treasurer, Don Remer*  
*Representative to National Council, Manuel Tubis*

The Los Angeles Chapter met December 4th at Eleda's, Los Angeles, Calif., to hear a discussion on the topic of "Chemical Contaminants and Additives in the Food Industry." Vice Chairman Peter J. Stupin presided, and briefly sketched the background of the topic, mentioning some of the basic difficulties

that have occurred in food production and some of the consequences resulting from recent developments.

Dr. L. Rockland then introduced Dr. Harold S. Olcott, head of the Vegetable Processing Division, Western Regional Research Laboratory, Albany, Calif., who obtained the B. A. and Master's degrees from the University of Denver; and the Ph. D. degree from the University of Iowa followed by post-doctorate work at Yale University under Dr. Mendell. Dr. Olcott specializes in the field of fats and proteins. The Lilly award was presented to him in 1937.

Dr. Olcott described the technological background involved in the field of food production. Food technology is made up of a great many different fields combined and since his own experience in proteins is only one of these fields. Dr. Olcott spoke on this phase. He explained the differences of views which arose over the methods of preserving and protecting food both in production and processing—the subject of inquiry of the Delaney Committee.

Starting with 1930, he reviewed problems that have arisen in food processing and technology. People first began to believe that they were being used as guinea pigs by the food and drug industry. This incident was followed by the difficulties surrounding the use of tricresol phosphates in synthetic ginger, resulting in a new law brought forth by Senator Copeland in 1933. In 1938, sulfanilamide dissolved in diethylene glycol created another problem which resulted in the passing of a New Food and Drug Law that set up a group to pass on all new products of the food and drug industry. The problems here are those of considering whether a substitute is necessary; whether a drug is necessary, and in what amounts they can be safely used by the public.

Under the Food and Drug Act, the enforcers have to seize the substance on the market in actual use, and can not act during its production or development. This group is now working directly and mainly on fungicides, pesticides, and insecticides used in farming.

Dr. Olcott then proposed the question, "Are the people really being poisoned?" He mentioned the various aspects of the Delaney Committee's work in investigating odd occurrences and dubious situations in various areas in order to put forth



a proper law to protect the people against deleterious or poisonous substances. The biggest difficulty which Dr. Olcott saw in the development of this law was the fact that it might be a hindrance to the food and drug industry and that it might interfere with good products in trying to eliminate inferior products.

A series of chemicals involved in the food production hearings of the Delaney Committee includes: (1) DDT, (2) Chloridine, (3) Benzene hexachloride, used for bad odors and flavors, (4) Parathion an excellent insecticide good because of its short-lived action, (5) Herbicides, weed killers that also act as drying agents for rice, cotton, etc. (6) Preservatives such as benzoic acid, sodium benzoate and sulfur dioxide, (7) Anti-oxidants, such as gum guaiac, propyl gallate, hydroxy butyl amicyl, (2) Anti-browning agents, such as ascorbic acid, and (9) Emulsifying agents such as Spans, Tweens and monoglycerides used mainly in the processing of white bread.

Dr. Olcott discussed the aging of flour by the use of nitrogen trichloride. Though this substance was discovered by Melanby in England to be a toxic agent to dogs, causing epileptic fits sometimes called "running fits," the results of his investigations were never proven by investigators in the United States, though they did discover that the action was directed mainly toward the proteins in the wheat or on the structure of flour. However, the investigation did result in the banning of nitrogen trichloride from further use in flour.

The next topic was what is a toxic substance? Even pharmacologists do not agree on exactly how this shall be determined. Toxicity is sometimes very

difficult to detect. Prussic acid and nicotinic acid can result in either an acute or chronic reaction in organisms. A reversed pattern could be shown with acid amino fluorine. DDT accumulates in the fatty tissues of the liver, and during stress or strain the fat, when utilized, may cause the DDT to show certain chronic activities. Excerpts from the Delaney report show that in 1951 it was verified that tests on food residues and insecticide residues were extremely difficult to determine to the critical specifications necessary. Many people do not want the Food & Drug Administration to have the authority to both make and enforce the rules which govern food and drug development, processing, and sales.

Dr. Olcott's final point was that if the Delaney Committee had done nothing else it had at least shown the people what the situations were and had given them a chance to see the activities that were going on in regard to them.

Dr. Gunther of the University of California described the insecticides used in studies being carried out at the Riverside laboratories. He also related the development of man with insects and the length of time insects had lived, compared to man, on this earth, quoting from a book which he is writing.

In preparing an insecticide for use, the following steps are taken:

A. Industry prepares a compound with promise.

B. A sample is sent to Riverside to be inspected.

C. Riverside tests this against local insects and organisms for its activity.

D. If it passes the test, it is further tested in a more extensive area.

E. If the extensive area tests are satisfactory, the material is then tested in different sections of the United States.

F. Next the material is worked on for its application procedures, and the difficulties overcome if possible.

G. Riverside makes no recommendation. It only publishes the results it obtains and leaves it up to the industry to decide whether the product is satisfactory.

Gordon Merchant of Merck & Company, James Turner of Atlas Powder Company, and Gordon Wood of the U. S. Food & Drug Administration answered questions during the discussion that followed.

—P. C. Ressler, A.A.I.C.

## New Jersey Chapter

*Chairman*, Harry Burrell  
*Chairman-elect*, Dr. James B. Allison  
*Secretary*, Erving Arundale  
*Treasurer*, Dr. W. A. Raimond  
*Representative to National Council*,  
T. R. Donlan

The New Jersey Chapter met December 2nd at the Military Park Hotel, Newark, N. J. Despite inclement weather, the attendance was excellent. Following the dinner, Dr. George L. Royer, F.A.I.C., spoke on "The Professional Activities of the American Chemical Society." He urged A.I.C. Members to write to the Secretary of the American Chemical Society on professional matters and assured them of the secretary's interest in communications from the A.I.C., a group devoted to professional thinking and activities. Dr. Royer serves effectively on Committees of both organizations.

Max Bender, chairman of the Program Committee, then introduced James Osterberg of the New York Police Department, who spoke on "Science vs. Crime," a title which he agreed had more popular appeal than "Criminalistics," the true name of his profession. He cited numerous instances to show how the crime laboratory of the Police Department serves to identify materials that aid in apprehending the criminal; or, equally important, to clear those falsely accused. Twenty-one out of the forty-eight States have no crime laboratory of any sort. Chemists could aid their profession and the cause of justice by urging the establishment of crime laboratories in all States, as part of the Police services.

## Washington Chapter

*Chairman*, Milton Harris  
*Vice Chairman*, P. E. Reichardt  
*Secretary*, Wesley R. Koster  
*Treasurer*, John F. Williams  
*Representative to National Council*, Milton Harris

### Public Relations

The December meeting of the Chapter was held December 10th in Bonat's Restaurant. Chairman Milton Harris presided, just one day after his return from a European business trip which had taken

him to several countries on the Continent.

After the luncheon, Dr. Harris announced the recent election of Dr. Harry L. Fisher, Hon. AIC, to the presidency of the American Chemical Society, and at the same time expressed the sincere regrets of the Chapter at losing such an outstanding member of the Chapter to the State of California. Dr. Fisher has accepted an appointment as professor of the Department of Rubber Technology of the School of Engineering, University of Southern California, Los Angeles 7, Calif. All present at the meeting joined Dr. Harris in wishing him well in his new appointment. Dr. Fisher plans to carry on his responsibilities, as president of the American Chemical Society, from Los Angeles.

Chairman Harris then presented Dr. Walter J. Murphy, Hon. AIC, editor of *Chemical & Engineering News* and other American Chemical Society publications. Dr. Murphy addressed those present on the subject of "The Chemist and Public Relations." His remarks engendered a great deal of interest and were followed by considerable discussion which was reluctantly stopped at 1:45 p. m.

### Price Control

A meeting of the Washington Chapter was held November 12th at Bonat's Restaurant, Washington, D. C. After presentation of a report of the Treasurer, Chairman Milton Harris explained that preparations should be under way for the annual achievement award to be made by the Chapter. He appointed Dr. Harry L. Fisher to serve as chairman of the Award Committee charged with the primary task of selecting a worthy candidate for the honor. Dr. Frank Gonet was appointed vice chairman. Other members of the committee named were: Dr. Julian Smith, Arthur Schroder, and Frank Wilder.

The guest speaker was Dr. E. E. Fogel, chief of the Chemical, Rubber, Drugs, and Fuels Division of the Office of Price Stabilization. Dr. Fogel on leave from Union Carbide and Carbon Corporation, enlightened those present in a most entertaining fashion concerning the problems and the humor associated with a price control authority.

---

### Sponsored Industrial Research

---



Chicago, Ill. 13791 S. Ave. "O"  
Madison, Wis. 323 W. Gorham St.  
New York, N. Y. 50 E. 41st St.  
Washington, D.C., 412 5th St., N.W.

---

### Addresses Wanted

If you know the present address of any of the following members of the AIC, please send it to the Secretary, The American Institute of Chemists, 60 East 42nd Street, New York 17, N. Y.

#### *Name and Last Known Address*

Dr. John Anthony Cella  
Armour & Co.  
1425 West 42nd Street  
Chicago 9, Illinois

Richard S. Harner  
19 D Parkway  
Greenbelt, Maryland

William F. Holland  
565 85th Street  
Brooklyn 9, New York

Frank J. Marocco  
347 East Ferry  
Buffalo 8, New York

Stuart Joseph Reid  
c/o Ames  
420 N.W. 38th Street  
Miami, Florida

Roger Nelson Sargent  
359 Beaver  
Beaver, Pennsylvania

Garry Lee Schott  
University of Michigan  
Ann Arbor, Michigan

Frederick J. Squire  
17 Mulberry Road  
Milton, Massachusetts



Edward Trachtenberg  
21 Hammond Street  
Cambridge 38, Massachusetts

Robert Voynow  
Phi Beta Pi House  
1705 Interlaken Blvd.  
Seattle, Washington

Barbara Wheeler  
8108 Maryland  
St. Louis, Missouri

### Will You Come

**Jan. 14, 1953.** Washington Chapter. Bonat's Restaurant, 1022 Vermont Ave., N. W., Washington D. C. Luncheon 12:15 p. m. Business meeting. Speaker, Dr. Milton Harris, Chapter chairman, on observations made during his recent trip to Europe.

**Jan. 15, 1953.** New York AIC Chapter jointly with the New York Section of the American Chemical Society. Hotel Commodore, New York, N. Y. Symposium on Public Relations.

**Jan. 16, 1953.** Chicago Chapter. Chicago Engineers' Club, 314 South Federal St., Chicago, Ill. Cocktails 6 p.m.; Dinner 6:30 p.m.; Meeting 7:30 p.m. Speaker: Dr. Otto Eisenschiml, F.A.I.C., "Do You Want Your Son to be a Chemist?" Reservations to John Krc, Jr., 3240 West 62nd Place, Chicago, Ill.

**Feb. 4, 1953.** Niagara Chapter. Hotel Niagara, Niagara Falls, N. Y. Presentation of Honorary Membership in the AIC to R. Lindley Murray, president of Hooker Electrochemical Co. Dr. Lincoln T. Work will make the presentation. Reservations should be made with T. E. Gilbert, 354 East Utica St., Buffalo 8, N. Y.

**Feb. 5, 1953.** Pennsylvania Chapter. Dr. Randolph T. Major, vice-president and scientific director, Merck and Company, will speak on "The Research Chemist in the Pharmaceutical and Medicinal Chemical Industry." For reservations call or write, Dr. V. V. Bellino, Barrett Div., Allied Chemical & Dye Corp., Philadelphia 37, Pa. (JF-3-3000).

**Feb. 16, 1953.** New Jersey Chapter jointly with North Jersey Section of the

American Chemical Society. Speaker: Dr. George Royer, F.A.I.C., on "American Chemical Society Professional Activities." Topical Group Meetings. Panel discussion on "How to Start Your Own Business," sponsored by the New Jersey Chapter and the Industrial and Engineering Group. For information, write David W. Young, Esso Laboratories, P. O. Box 51 Linden, N. J.

**March 1953.** New York Chapter. Student Medal Awards. Place, date and program to be announced.

**May 7, 1953.** Pennsylvania Chapter. Dr. Sidney D. Kirkpatrick, editorial director, *Chemical Engineering*, will speak on "The Rocky Road of the Chemical Professor." At this meeting Student Medals will be awarded. For information and reservations: Dr. V. V. Bellino, Barrett Div., Allied Chemical & Dye Corp., Philadelphia 37, Pa. (JE-3-3000).

**May 12-13, 1953.** Annual Meeting of The American Institute of Chemists. Benjamin Franklin Hotel, Philadelphia, Pa. Presentation of A.I.C. Gold Medal to Dr. J. C. Warner, president of Carnegie Institute of Technology. Committee on Arrangements: Marcus Sittenfeld, C. P. Neidig, and Hillary Robinette.

**May—, 1953.** New York Chapter. Presentation of Honor Scroll. Date, place, and program to be announced.

---

**Glass:** The subject of the February 6th meeting of the New York Section of the American Chemical Society, to be held at 7:30 p.m. at the Union Carbide and Carbon Building, 30 E. 42nd Street, New York, N. Y. Dr. W. W. Shaver of Corning will speak on "Glass Technology—Recent Developments." Dr. Alexander Silverman, Hon. AIC, will speak on "Glass, Symbol of Infinite Variety," illustrated in color.

## For Your Library

### Time's Arrow and Evolution

By Harold F. Blum. Princeton University Press. 1951. XI + 222 pp. 6" x 9." \$4.00.

Sir Arthur Eddington symbolized the meaning of the second law of thermodynamics by speaking of "time's arrow" — one of those aperçus which have to be felt, but not analyzed. All real events have one direction, towards increase in entropy; reversibility is an ideal which is never realized. Dr. Blum, the well-known physiologist, attempts in his book to apply the Second Law to evolution, particularly the evolution of living systems.

The present review of the book comes rather late, not through your reviewer's fault, but the delay may not be harmful. This is not a book from and for the moment; it took about 18 years to grow into its present form, and I hope that it will interest readers for many years to come. It is true that the author incorporates many recent results of research in a great number of fields of science, but they serve as examples, not as sources of the general view he tries to open before us. In fact, the author goes beyond all single results to an ideal sum of all experience: "The fact that the entropy can sometimes decrease within such a system is no controversion of the second law of thermodynamics. For if we should expand our system to include all the energy exchange, it would be found that in the larger system the entropy had increased." (p. 15.) Thus the ideal state of reversibility is replaced by an ideal totality of "systems," or a complete cosmos.

The ideal nature of this concept follows at least from the fact that we cannot measure it. The author knows this very well; he argues "... the important thing is the converse of this. That is, in order to deny the applicability of the second law these magnitudes would have to be measured, and until this is done the failure of the law cannot be proven." (p. 202.)

For a general application of this law to the processes of evolution, it is most important that systems of low entropy can form at the expense of increased entropy in the environment. The second law is not

#### COMMERCIAL CHEMICAL DEVELOPMENT

Surveys • Technical and Economic Evaluations • Application Research • Operating Cost Studies • Financial Reports • Profit Estimates • Recommendations for Acquisitions and Expansions.



#### R. S. ARIES

AND ASSOCIATES  
CHEMICAL ENGINEERS AND ECONOMISTS  
New Products and Processes  
Market Research Completely  
(Chemical and Drug Plants)  
400 Madison Ave., N. Y. 17  
Elderado 3-1430

inconsistent with progressive development of higher organic life or its regression. From this highly interesting and clearly presented survey of the evolution of the earth and the life on its surface the reader may remain unconvinced of the author's over-all intention. The thermodynamics of photosynthesis or any other special process does not lead directly and convincingly to a demonstration of time's arrow in evolution.

Nevertheless, it is intriguing and perhaps necessary to attempt such a general demonstration. The lucid discussion of such problems as "the origin of life," the description of the adenylic acid system and its widespread activity, the comparison of the tetrapyrrole patterns among animal groups will be found rewarding parts of this book, even when its ultimate goal is felt not to have been attained or to be attainable at all.

—DR. EDUARD FARBER, F.A.I.C.

### Textbook of Organic Chemistry

By E. Wertheim. 3rd Edition. The Blakiston Co. 1951. 958 pp. 6" x 9 1-4." \$5.00.

A textbook of organic chemistry which arouses the interest of students by numerous illustrations as well as photographs and biographies of famous chemists. The candid photograph of Chevreul active at a hundred years of age is fascinating. The subject matter of the book is well expounded and up to date.

—DR. JOHN A. STEFFENS, F.A.I.C.

### Vinyl and Related Polymers

*Their Preparations, Properties, and Applications in Rubbers, Plastics, Fibers, and in Medical and Industrial Arts.* By Calvin E. Schildknecht, Celanese Corporation of America, John Wiley & Sons, Inc., 1952, pp. 723. \$12.50.

As the subtitle implies this book covers all of the numerous uses of the vinyl-type polymers which are today of such vital importance both to industry and medicine. The author, whose experience has included teaching as well as industrial research, has both an encyclopedic knowledge of his subject and the ability to make that information available to other people.

The text is clear, concise, and understandable to the layman but in no sense lacking in interest for the research chemist.

Beginning with an introduction to polymer science, Dr. Schildknecht brings his reader right up to the latest developments in the field. Over 4000 references from 1835 to the second half of 1951 are given, including French, German, and United States patents. And the subject index makes of this a completely useful volume for any and all interested in the wide range of fields covered.

—DR. FREDERICK A. HESSEL, F.A.I.C.

### Properties of the Principal Fats, Fatty Oils, Waxes, Fatty Acids and Their Salts

By M. P. Doss, *The Texas Company*, 135 E. 42nd St., New York, N.Y. 244 pp., 8½ x 11", \$5.00.

This publication covers the properties of approximately 50 of the principal fats, fatty oils, and waxes. While the author, technical librarian of The Texas Company, surveys only aliphatic acids he tabulates the properties of more than 800 of these. The unique part of the book is the data given on the salts of the fatty acids ranging from aluminum through zirconium. Approximately 1750 salts are listed. This material includes considerable unpublished data.

The book is the result of ten years' intensive search through published and unpublished data and literature. More than 1350 literature references are listed. The book concludes with pertinent conversion tables (i.e. temperature, gravity, viscosity, color) and a detailed subject index.

### Fundamental Principles of Polymerization

By G. F. D'Alelio, A.B., Ph.D., *Koppers Co. Inc.*, Pittsburgh, Pa. John Wiley & Sons, Inc., 1952, 517 pp. \$10.

Having first prepared a laboratory manual in "Experimental Plastics and Synthetic Resins," Dr. D'Alelio has now filled the need for a volume dealing with the fundamental principles of polymerization — a volume to be used not only in the classroom but by industrial chemists as well. Because, while the book is not encyclopedic in scope, it does summarize the minimum fundamental knowledge that a scientist in the field of polymers must have.

Author and subject indexes follow the text, which is clear and readable and well-documented with charts and tables, all large enough to be easily studied.

### Pulp and Paper

*Chemistry and Chemical Technology, Volume II.* By James P. Casry, *Interscience Publishers, Inc.* 1952. 608 pp. \$15.

Written by a former associate professor of pulp and paper manufacture at the State University of New York College of Forestry, now the director of technical service of the A. E. Staley Manufacturing Co. of Decatur, Ill., this volume covers all the properties of paper and the important paper-converting operations which include: pigment coating printing, coating and saturation with resins and waxes, and lamination. Since all these operations are now carried out not only in the same plant where the paper is made but also often directly on the paper machine, the paper chemist must have a thorough understanding of them. He will find this book, book, well-organized and indexed, of real value.

—DR. FREDERICK A. HESSEL, F.A.I.C.

### Acid-Base Titrations in Non-Aqueous Solvents

By James S. Fritz, Ph.D. *G. Frederick Smith Chemical Co.*, P. O. Box 1611, Columbus, Ohio. 47 pp. 6x9". Free.

An excellent summary of titrations in difficult fields, amino acids and amines, basic impurities in petroleum feed stock, weak carboxylic acids, sulfa drugs, etc.

## Chemical Books Abroad

RUDOLPH SEIDEN, F.A.I.C.

Mueller & Steinicke, Munich 15: *Chemische Untersuchung von Arzneigemischen, Arzneispezialitäten und Giftstoffen*, by E. Baman and E. Ullmann 1951, 276 pp., paper covers, DM 15. A compilation of the most dependable analytical methods for the qualitative determination of drugs and chemicals found in pharmaceuticals, human organism and its excreta, food-stuffs etc. 12 tables of chemical and physical constants and of specific reactions support the text.

Verlag R. Oldenburg, Munich: *Die Pektine und ihre Verwendung*, by Beatrix Hottenroth, 1951, 210 pp. (36 ill.), paper covers, DM 11. An excellent monograph of the pectins with 347 German foreign literature references (up till 1950). Of special interest are the chapters on quality evaluation, pectin enzymes, uses of pectins and its derivatives in food industry (with recipes), pharmacy, medicine; biochemistry, etc.

Verlag Wilhelm Knapp, Halle-Sale: *Die Fabrikation von Schuhcreme und Bohnerwachs*, by Carl Ebel, 2nd ed; 266 pp. (15 ill.), paper covers, DM 12. Theory and practice of the manufacture of all types of shoe creams, floor waxes, and auto polishes. The properties of their raw materials and the methods for their analysis are fully described in this book which also includes an extensive, well-arranged listing of literature sources.

Georg Thieme Verlag, Stuttgart-O: *Wörterbuch fuer Aerzte, Vol. v. Deutsch-englisch*, by Fritz Lejeune, 1951, 1349 pp., DM 24. This dictionary, written by a German physician who as a war prisoner lived in America, translates from German into English — with special consideration of Americanisms! — 43,000 medical, biological, pharmaceutical, chemical and other important terms. It should be very helpful to Americans reading German professional literature.

Verlag Hans Carl, Nuernberg: *Vom Kristall zum Lebewesen*, by Hans Vogel, 1952, 319 pp., DM 12.50. The basic facts of biogenesis are discussed here in popular

## THE LENTO PRESS

*Distinctive Printing*

441 Pearl Street

New York, N.Y.

Worth 2-5977

scientific manner by a biochemist who tries to answer the age-old question: What is life and how did it originate. Unlike Ernst Haeckel who, in his "Evolution of Man," denied the existence of God, Vogel feels that there is no reason to assume that religion and science are incompatible.

Frankh'sche Verlagsbuchhandlung, Stuttgart: *Kosmos Lexikon*. The first 3 parts of a new "encyclopedia of the natural sciences" have been issued; a total of 14 parts, each consisting of 160 pages at DM 2.50, will make up the complete, well-illustrated reference work which is edited by the editors and writers of the famous monthly "Kosmos." • *Kleiner Wegweiser zum Bestimmen von Edelsteinen*, by G. O. Wild and K. H. Biegel, 1950, 34 pp. (20 ill.), paper covers. A guide for the determination of precious stones, chiefly by physical — particularly optical — methods.

Verlag fuer Chemische Industrie, H. Ziolkowsky, Augsburg: *Die Oele und Fette in Wirtschaft und Technik*, by Peter F. Rickmers, 1951, 247 pp., DM 16.50. All vegetable oils and fats, including their production, many uses and economical importance, are described. Of great practical value are the 69 tables, filling 72 pages, which contain physical and chemical constants as well as statistics concerning production and consumption data from all over the world.

Urban & Schwarzenberg, Munich 22: *Die Radio-Isotope*, by J. Hiller and A. Jakob, 1951, 256 pp., (64 ill.), DM 32.— An introduction into the theory and practice of the isotope methodics, with emphasis on the preparation and determination of radio-isotopes and their application in biology and medicine. Hundreds of bibliographic references concerning radio C, P, Na, I, and Co (up to the year 1951) conclude the volume.

## Something New

"New Type Mixer." Information. Industrial Process Engineers, 8 Lister Ave., Newark 5, N. J.

"Summary of Standard Specifications For Steel Castings." Chart. Steel Founders' Society of America, 920 Midland Bldg., Cleveland 15, Ohio.

"Conax Bare Wire Thermocouplers." Bulletin TC-1. Conax Corp., 4515 Main St., Buffalo 21, N. Y.

"Hydralift Agitator For Film Processing." Information. Oscar Fisher Co., Inc., 1000 North Division St., Peekskill, N. Y.

"Bleaching Acetate and Nylon With Peracetic Acid." Bulletin No. 44. BECCO Sales Corp., Station B, Buffalo 7, N. Y.

"New Tachometer Bulletin." Bulletin No. S1402. The Bristol Co., Waterbury 20, Conn.

"Fisher Laboratory Furniture." Catalog 25. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

"New Vacseal Pumps." Bulletin PB-52. The Galigher Co., 545 West Eighth St., South, Salt Lake City 4, Utah.

"Single Flowmeter Kit." Information. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

"Liquid Scale Data Sheet." Bulletin No. 5204. Richardson Scale Co., Clifton, N. J.

"New Alumaloy 'C' Clamp." Information. Labline, Inc., 217-221 North Desplaines St., Chicago 6, Ill.

"Requirements of Good Management." Folder (117-35). Denham and Co., 925 Book Bldg., Detroit 26, Mich.

"Testing by the National Bureau of Standards." NBS Circular C483. 93 pp. 25 cents from Superintendent of Documents, U. S. Gov. Printing Office, Washington 25, D. C.

"Acid Carboy Dumper." Information. General Scientific Equipment Co., 27th & Huntingdon Sts., Philadelphia 32, Pa.

"General Catalog." Catalog requisition forms obtainable from Scientific Glass Apparatus Co., Inc., Bloomfield, N. J.

"Magic-Vulc Plastic Rubber for Repairing Conveyor Belts." Folder. Magic Chemical Co., Brockton, Mass.

"Denver 'Sub-A' Flotation Machine." Bulletin No. F10-B69. Denver Equipment Co., 1400 17th St., Denver 17, Colo.

"Edscope Stereo-Microscope." Information. Edmund Scientific Corp., 117 East Gloucester Pike, Barrington, N. J.

"Plastic Safety Goggle." Information. United States Service Co., 1215 McGee, Kansas City 6, Mo.

"New Pneumatic Controller." Catalog C-50. Fischer and Porter Co., Hatboro, Pa.

"Merco Infra Red Heating and Drying Equipment." Information. Corona Manufacturing Corp., 5210 San Fernando Rd., Glendale 3, Calif.

"Corrosion-Resistant Tank Liners." Information. American Agile Corp., P. O. Box 168, Bedford, Ohio.

"New Line of Metering Pumps." Information. Central Scientific Co., 1700 Irving Park Road, Chicago 13, Ill.

"New X-Ray Spectrograph Chart." Chart. North American Phillips Co., Inc., 750 S. Fulton Ave., Mount Vernon, N. Y.

"Carrier Dyeing of Dacron with Benzoic or Salicylic Acid." Booklet. Heyden Chemical Corp., 342 Madison Ave., New York 17, N. Y.

"Process Equipment." Brochure. Blaw-Knox Co., Farmers Bank Building, Pittsburgh 30, Pa.

"Laboratory Thermometers." Catalog A-52. Brooklyn Thermometer Co., 217-09 Merrick Blvd., Springfield Gardens, N. Y.

## Opportunities

**Doris Eager, M.A.I.C.**

### Chemists Available

**Chemist:** M. S., F.A.I.C., 12 years' experience in synthetic organic, biological research, and production. Age 38. Permanent affiliation of prime importance. Box 14, THE CHEMIST.

**Sales Executive:** 13 years successful experience professional service executive sales, and advertising. Age 39. Ethical pharmaceuticals. Box 12, THE CHEMIST.

**Technical Sales:** Graduate chemical engineer. Varied experience in foods, pharmaceuticals. Ample experience in South America. Administrative record. Top reference. Box 10, THE CHEMIST.

**Patent Attorney:** Skilled solicitor of mechanical and chemical applications. Some experience in infringement trials, general law, and organic research. Doctorate training in organic chemistry. Private practice, 6 years diversified patent experience. Desires connection with corporation. Box 16, THE CHEMIST.

**Chemist, Food Technologist.** B. S. & post-graduate work. 16 years varied experience in food industry in research, development, and production. Prefer administrative, liaison or technical service activity utilizing background and experience. Box 18, THE CHEMIST.

### Positions Available

**Wanted Chemists:** Ph. D. for group leader. 1-3 years industrial experience for organic development laboratory.

B. Sc. or M. S. Organic major. 0-5 years industrial research for development laboratory or pilot plant.

These positions are for a medium-sized old established, progressive, expanding organic chemical mfr. Location WilliamSPORT, Pa. Interviews in New York City. Compensation: Prevailing salaries with yearly bonus and with good chance for advancement. Box 11, THE CHEMIST.

## PHOENIX

CHEMICAL LABORATORY, INC.

*Specialists in Petroleum Products*

*Chemical Tests • Physical Tests*

*Qualification Tests*

3953 Shakespeare Avenue

CHICAGO 47, ILL.

**Inspector Chemicals:** Insecticides, detergents, oils, polishes, soap, etc., water purification. Position in New York, N. Y., but involves travel. 4 years experience required, for which education may be substituted on the basis of 1 year for 9 months of experience. Base salary \$4,205 annually plus travel allowance of \$7.00 per day. Box 13, THE CHEMIST.

**Chemist:** Who knows materials used in manufacture of electrical equipment for firm in California. Emphasis on practical ability. Salary open. Box 15, THE CHEMIST.

**Research Director:** Doctorate in physics or physical chemistry. Must have broad administrative experience as well as demonstrated research leadership. Mid-forties. Location East. Approximately \$20,000. Box 17, THE CHEMIST.

**Industrionics, Inc.:** New firm established January first by Roland S. Lee, as manufacturers' representatives, 47 Tarleton Rd., Newton 59, Mass., seeks new lines in resins, fillers, heavy chemicals.

**Opened:** The new research laboratory in Plainfield, N. J., of National Starch Products, 270 Madison Ave., New York 16, N. Y. The company does research (and production) on liquid synthetic adhesives.



**Chosen:** Dr. Harry L. Fisher, Hon. AIC, special assistant to the director of the Office of Synthetic Rubber, Reconstruction Finance Corporation, Washington, D. C., as president-elect of the American Chemical Society. He will become president of the society in 1954.

Dr. Raymond E. Kirk, F.A.I.C., head of the Department of Chemistry and dean of the Graduate school of Polytechnic Institute of Brooklyn, N. Y., and Dr. Ernest H. Volwiler, F.A.I.C., president of Abbott Laboratories, North Chicago, Ill., were elected to the American Chemical Society's board of directors to serve three-year terms.

---

**Agent:** Appointed by the Pennsylvania Salt Manufacturing Company, Henry S. Rondeau and the Cleveland Industries Co., 1935 Euclid Ave., Cleveland, Ohio, to represent Pennsalt's corrosion engineering products in Ohio and Northern Kentucky.

---

**Appointed:** Clarke C. Miller, F.A.I.C., as information co-ordinator at Standard Oil Company's Whiting, Indiana, research laboratories. He joined Standard (Indiana) in 1924 as chemical engineer. From 1935 to 1945, he was chief chemist at the company's Wood River, Ill., laboratory. He has been in charge of technical-information activities at Whiting since 1945.

**Symposium:** On the application of Electrochemistry to Biology and Medicine to be held at the Statler Hotel, New York, N. Y., at the spring meeting of The Electrochemical Society, April 12th to 16th. A detailed program will be available late in February and may be obtained by writing to the society at 235 West 102nd St., New York 25, N. Y.

---

**Associated:** Dr. Lawrence W. Bass, F.A.I.C., industrial research executive, with Arthur D. Little, Inc., Cambridge 42, Mass. Dr. Bass has most recently been vice president in charge of research for U.S. Industrial Chemicals Company. He was assistant director of Mellon Institute from 1937 to 1942.

---

**Conference:** To discuss the vast range of basic materials available to manufacturers, to be held at the Hotel Roosevelt, New York, N.Y., June 16th to 18th, to supplement the first Exposition of Basic Materials for Industry to be held at Grand Central Palace, New York, N.Y., June 15th to 19th. Registration cards may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N.Y.

---

**Appointed:** By Central Scientific Company, Chicago, Ill., John F. Green as general sales manager, and Jack N. Widick as Indiana sales representative.



**Papers:** In the fields of petroleum, geology, agriculture, pharmacy, biology, ceramics, etc., are welcome for the symposium on "Emission Spectroscopic Determination of Metals in Non-Metallic Samples," to be held by the American Association of Spectrographers in Chicago, May 1, 1953. Address inquiries to: J. P. Pagliasotti, chairman, Symposium Committee, c/o Standard Oil Co. (Indiana), Box 431, Whiting, Ind.

**Established:** Foundation for Education and Research, by the American Society for Metals, 7301 Euclid Avenue, Cleveland 3, Ohio. William H. Eisenman, F.A.I.C., national secretary, states that the assets of the Foundation each year will provide an income of approximately \$30,000 to be used for the advancement and dissemination of scientific knowledge, particularly on the technology of metals, either through education and research by the Foundation or through the support of educational and research activities in established organizations and institutions.

**Included:** *The Paint and Varnish Production Manual*, edited by Verne C. Bidlack, F.A.I.C., and E. W. Fasig, F.A.I.C., in the list of one-hundred leading technical books compiled by the chief of the Science and Technology Division of the New York Public Library.

---

EVANS  
RESEARCH & DEVELOPMENT  
CORPORATION

*Organic and Inorganic Chemistry  
Processes — Products*

*Unusually Extensive Facilities  
Your Inspection Invited*

250 EAST 43RD ST., NEW YORK 17, N. Y.

---

**To Sort Glass:** Recipe: Mix 59 ml of carbon tetrachloride and 41 ml of benzene in a bottle. Result: a solution with refractive index of 1.472, about that of Pyrex-brand glass. When an assortment of pipettes is placed in the bottle, the Pyrex-brand pipettes will be invisible, the soft glass ones clearly outlined. Credit: Dr. R. E. Black, in *The Laboratory*, Dec. 1952. (Published by Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.)

**Conference:** On Scientific and Engineering Careers to be held at New York University, Washington Square, New York, N.Y., February 23rd, for the benefit of parochial and high school students residing in the New York area. Objective: To channel qualified high school students into scientific and engineering careers. John Kotrady, F.A.I.C., of the Texas Company, is general chairman of the Conference, sponsored by the Technical Societies Council of New York, of which the New York AIC Chapter is a member.

**Purchased:** The Eagle-Picher paint plant in Atlanta, Ga., by the Glidden Company of Cleveland, Ohio. Plans to double its capacity were announced. The plant superintendent will be Walter S. Herner, to be transferred from Cleveland.

**Merged:** Hardesty Chemical Company, Inc., into W. C. Hardesty Co., Inc. It will operate as the Hardesty Chemical Division of W. C. Hardesty Co., Inc., from its present headquarters at 41 E. 42nd St., New York, N.Y.

**Expansion:** Announced by the Nitrogen Division, Allied Chemical & Dye Corporation, for its South Point, Ohio, plant. The project, involving the expenditure of four-million dollars, includes doubling the plant's urea synthesis capacity. The work will be completed in early 1954.

**Open Meetings:** Of the Association of Consulting Chemists and Chemical Engineers, Inc., 50 East 41st St., New York 17, N.Y., are scheduled for April 21st, Hotel Belmont Plaza, New York, N.Y., symposium and dinner, and October 27th, Hotel Belmont Plaza, 25th Anniversary celebration.

**Entry:** Into the Marine chemical field by Fine Organics, Inc., 211 East 19th St., New York, N. Y., with the appointment of Capt. George W. Mikkelsen as director of the Marine Chemical Department.

**New Company:** La Societe Monsanto-Boussois, S.A., formed jointly by Monsanto Chemical Company and Compagnies Reunies des Glaces & Verres Speciaux de la France, to produce plastic materials. Construction will be started at Wingles, near Lens, France.

**Appointed:** Dr. Raymond F. Schultz, F.A.I.C., as special assistant to the director of research of Hercules Powder Company, Wilmington, Del. He has been technical director of the Experiment Station since 1951, and director of the research center before 1945.

**Largest Platforming Unit:** The 12,000 barrel per day unit placed on stream by Standard Oil Company of California at its El Segundo refinery. The process is licensed by Universal Oil Products Company.

**District Office:** Established by F. J. Stokes Machine Company, Philadelphia, at 2904 Woodburn St., Cincinnati, Ohio.

**Sales Office:** Established by Monsanto Chemical Company in the Foshay Tower Building, Minneapolis, Minn.

**Bright Future:** Ahead for the fibers, according to Clyde B. Morgan, president of Rayonier Incorporated. "The miracle of the man-made chemical fibers is still in the making, and more interesting developments are still to be achieved."

**Appointed:** Albert E. Ponter, Jr., as export sales manager for Rayonier Incorporated, 52 Vanderbilt Ave., New York 17, N. Y., Russell M. Pickens, F.A.I.C., vice-president in charge of sales announced recently.

**Elected:** Dr. Edward Farber, F.A.I.C., chief chemist of Timber Engineering Co., 1319 18th St., N.W., Washington 6, D.C., as a Fellow of the Royal Society of Arts, and as an honorary member of the Mark Twain Society.

**Elected:** Cary R. Wagner, F.A.I.C., as president of the Synthetic Organic Chemical Manufacturers' Association for 1953. He is vice-president of General Aniline & Film Corporation, 230 Park Ave., New York 17, N.Y.

**Speaker:** Clark E. Thorp, F.A.I.C., chairman of the chemistry department at Armour Research Foundation, on "Ozone Technology," at a seminar, held December 9th, at the University of California, Pasadena.

---

## MOLNAR LABORATORIES

Organic Process Development, Control  
Laboratory and Pilot Plant Studies

*Your Inquiries Invited*

211 E. 19th St. New York 3, New York  
Telephone: GRamercy 5-1030

---

**Appointed:** Dr. Frederick J. Emmerich, Hon. AIC, president of the Allied Chemical and Dye Corporation, to the newly created Board for Development at New York University, by Chancellor Henry T. Heald. The Board will help determine policies in connection with the University's ten-year \$102,000,000 program for new buildings and endowment.

**Premedical Education Papers:** Presented at the National Symposium on Premedical Education at St. Louis, Missouri, December 28th, will be published in *The Scalpel*. Copies may be obtained on request to Alpha Epsilon Delta, 7 Brookside Circle, Bronxville 8, N. Y.

**Elected:** Earl P. Stevenson, F.A.I.C., president of Arthur D. Little, Inc., Cambridge, Mass., as a director of the Liberty Mutual Insurance Company, Boston, Mass.

**New Format:** For the *Chemist-Analyst*, publication of J. T. Baker Chemical Co., Phillipsburg, New Jersey.

## Condensates

**Ed. F. Degering, F.A.I.C.**

*Buckman Labs., Inc.*

Food rich in fatty acids (butter, certain grains and seeds, fatty meats, milk and salad oils, for example), should not be sterilized with gamma radiation, according to James F. Mead, at the AEC's biochemistry division at UCLA.

The development of a fermentation process for the production of Cortisone, reported by the research team at Upjohn, represents a real milestone in the fermentation industry.

The stabilization of beach sand, according to F. E. Lowance of the U. S. Bureau of Yards and Docks, may be effected by the condensation polymerization of aniline and furfural.

In less than forty years, according to the Materials Policy Commission, the United States has used more of almost every metal and mineral than the whole world used in the centuries preceding.

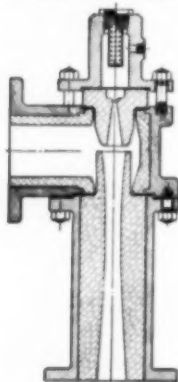
A finishing layer of concrete containing about 10 per cent of copper acetoarsenite is reported by Battelle Memorial Institute to be effective for two or three years in preventing the growth of the molds which cause athlete's foot.

The production of Dynel staple fiber is to be increased about 300 per cent as the result of a new \$30,000,000 plant to be built by Union Carbide and Carbon Corporation at Spray, N.C.

Be not careless in deeds, nor confused in words, nor rambling in thought.

—MARCUS ANTONIUS.

## C-R Evactors Meet Corrosion Problems



The chemical industries are employing more and more Croll-Reynolds Evactors in vacuum processes where corrosion resistance is a major consideration. These steam jet vacuum units provide pressures ranging from a few inches to a few microns. Croll-Reynolds is a pioneer in the use of new construction materials and our engineers are investigating corrosion problems continually.

Stainless steels, Monel metal, Beryllium copper, Ni-Resist, PMG metal, hard lead, special bronzes, Hastelloy, and Illium are but a few of the special metals which find their way into our equipment. Carbon is used extensively as a lining material, and many plastics including Teflon and synthetic materials are used for making complete Evactors.

Consult our engineers for high vacuum equipment carefully designed for your specific conditions, and constructed of materials selected for your particular conditions.



### CROLL-REYNOLDS CO., Inc.

MAIN OFFICE—

751 CENTRAL AVENUE, WESTFIELD, N. J.

NEW YORK OFFICE—

17 JOHN STREET, NEW YORK 38, N. Y.

Chill-Reactors Steam Jet Evactors Condensing Equipment

# ADJUSTATHERM\*

(an adjustable stem thermometer)

Set of 2  
replaces up to 9  
regular thermometers

**Y**OU no longer require individual immersion thermometers for each of your various size flasks. Two "Adjustatherms" will replace up to nine of the conventional type! They're more convenient to use and will save you money.

With an "Adjustatherm," in addition to taking the liquid temperature, you may also obtain the vapor temperature *without dismantling the equipment!* Simply lift up the thermometer.

This new instrument, which works like a trombone, consists of a thermometer having either an etched scale with clearly defined markings against a yellow background—or a milk glass scale. The thermometer fits into a precision bore sleeve (or adapter) with either a standard taper or semi-ball joint.



↑ "Adjustatherm", which works like a trombone, shown in actual use

→ Note both sizes are available with standard taper or semi-ball joint



are two sizes of immersion stem lengths to choose from: 1) 2" minimum-6 1/2" maximum for 250 to 3000 ml. flasks, 2) 7" minimum-11 1/2" maximum for 5000 to 22,000 ml. flasks.

Both sizes are available in three ranges—0° to 150° C, 0° to 250° C, and 0° to 360° C.

		Etched Scale	Milk Glass Scale
No. J-2295	Thermometer only, 6 1/2" long.	\$ 6.50	
No. J-2296	Thermometer only, 11 1/2" long.	10.00	
No. J-2297	Thermometer only, 6 1/2" long.		\$ 7.50
No. J-2298	Thermometer only, 11 1/2" long.		11.00
No. J-2299	ST 10/18 Adapter only.	3.50	3.50
No. J-2299-1	SB 18/6 Adapter only.	3.75	3.75

When ordering, please be sure to specify range—0°-150° C, 0°-250° C, or 0°-360° C.

\* Patent applied for



**SCIENTIFIC GLASS APPARATUS CO., INC.**  
BLOOMFIELD - NEW JERSEY  
LABORATORY APPARATUS - INSTRUMENTS - CHEMICALS - GLASSWARE

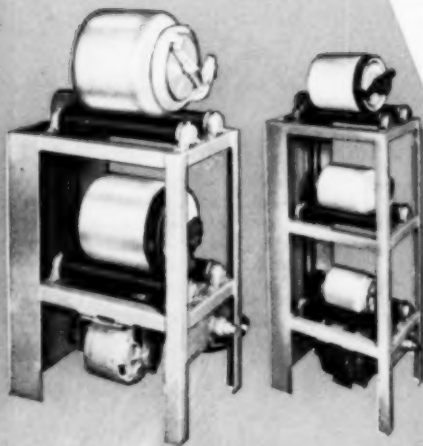
FAST...EFFICIENT...COMPACT...STURDY

## "U. S." GRINDING EQUIPMENT

FOR THE LABORATORY—FOR SPECIALIZED PRODUCTION



**JAR MILLS:** A "unitized" line of jar mills tiered to save space. Exclusive roller design keeps jars centered. Sturdy all-steel frame. Heavy duty drive with variable speed control optional. Available in models to take 1-12 jars.



**MILL JARS:** Made of strong, solid, "high-fired" porcelain with fast, positive, "all-in-one" locking device. Wide mouth for easy loading and unloading. Long wearing and non-contaminating. Gasket supplied in rubber, cork, or plastic. Six sizes — one to six gallon capacity.

**BURUNDUM:** White, cylindrical medium that gives faster, finer grinds. Extra-hard, extra-heavy, extra-tough. Unique shape gives more grinding area per contact; high specific gravity gives more contacts per minute; greater hardness gives longer wear — minimum contamination.

43-D-2



**U. S. STONEWARE**

PROCESS EQUIPMENT DIVISION

• AKRON 9, OHIO

See your Laboratory Supply House or Write for detailed information.